



Bowral and District Hospital Redevelopment State Significant Development Application Transport Impact Assessment

Client //	Health Infrastructure
Office //	NSW
Reference //	16S1536000
Date //	09/07/18

Bowral and District Hospital Redevelopment


State Significant Development Application

Transport Impact Assessment

Issue: E 09/07/18

Client: Health Infrastructure
Reference: 16S1536000
GTA Consultants Office: NSW

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A	24/4/18	Final	Syed Ali	Karen McNatty	Karen McNatty	Karen McNatty
B	16/05/18	Final	Syed Ali	Karen McNatty	Karen McNatty	Karen McNatty
C	23/05/18	Final	Syed Ali	Karen McNatty	Karen McNatty	Karen McNatty
D	01/06/18	Final	Syed Ali	Karen McNatty	Karen McNatty	Karen McNatty
E	09/07/18	Final	Syed Ali	Karen McNatty	Karen McNatty	

Executive Summary

Bowral and District Hospital (BDH) is a 91-bed district level hospital located within the Sydney South West Local Health District (SSWLHD).

Bowral is located around 120 kilometres southwest of Sydney on the B73 Highway which connects to the Hume Highway in the north near Aylmerton and extends through to Nowra in the south.

BDH is located around one kilometre from the Bowral Town Centre along Bong Bong Road and Bowral Street and is bordered by Bowral Street, Sheffield Road, Mona Road and Ascot Road, with approximately 210 metre frontages to each.

The BDH main entrance is currently serviced by at least four bus services operated by Berrima Bus lines. Bus services provide local connections to Bowral and outer areas including Mittagong and Moss Vale. Each service generally provides hourly services on weekdays and limited number of services on a weekend. Bowral Train Station is located around one kilometre from BDH.

Access to BDH is currently provided from all four surrounding roads. The main visitor access is directly from Bowral Street, while the main staff parking access is from Ascot Road, another parking area is also provided from Mona Road. Emergency vehicles currently access the site via the visitor car park entrance on Bowral Street. Access to the Southern Highlands Private Hospital is provided from both Bowral Street and Sheffield Road.

Parking occupancy surveys were undertaken for the entire site and separated between the car parks associated with BDH and the car park adjacent to the Private Hospital. On-site parking demand is relatively high for the BDH, with a peak demand of 184 (94 per cent) spaces occurring between 11:30am and 12:30pm. The Private Hospital car park also peaked at noon, with an occupancy of 29 (76 per cent) parking spaces, however contained minimal variation throughout the day with a minimum demand of 26 (68 per cent) parking spaces.

Based on observations, BDH generates additional parking demand on the frontage streets of Bowral Street, Mona Road and Ascot Road. On street parking on Sheffield Road was observed to be largely associated with the Private Hospital.

The intersections surrounding the hospital currently operate satisfactorily with no queuing or delay on approaches.

The scope of the State Significant Development Application (SSDA) intends to potentially address:

- adult medical inpatient beds (acute, sub-acute and mental health)
- surgical beds and perioperative suite
- ED
- high dependency unit/ intensive care.

This proposal includes following:

- a new main entry
- new inpatient units comprising 34 acute medical/ surgical beds, two mental health beds
- 10 new sub-acute beds
- two medical day only beds
- eight bed Close Observation Unit
- seven bed Maternity Unit
- five bed Paediatric Unit

- perioperative Suite including two new Theatres and one Procedure Room and surgical day only beds
- linkways and connections back to existing buildings and supporting services in the retained buildings
- a reconfigured public and ambulance entry into ED which allows for delivery of the proposal and subsequent relocation of the ED in a future stage
- on-grade car parking and drop off facilities, and overall improved access and wayfinding throughout the campus
- upgrades to IT and engineering services infrastructure supporting the BDHR.

A new access would be provided on Bowral Street to the new building, main entrance, drop off and parking area.

Once the new building is operational the existing driveway from Bowral Street would only be used by restricted vehicles to gain access to the western side of the building. The number to vehicles would be minimal and would not impact the ED access.

The BDHR remains relatively static in terms of the number of inpatient beds, with the focus being on building renewal and provision, enhancement and/or modernisation of other services. The proposal provides an overall provision of 94 beds and therefore a net increase of three beds from the current situation.

The proposed traffic generation for the worst-case scenario would increase the existing on-site traffic generation from 132 vehicles per hour to 134 vehicles per hour. This is a negligible increase in traffic generation and therefore, the BDHR is not anticipated to have any notable impacts to the surrounding road network.

The BDHR would maintain the existing loading arrangements on-site. Site observations have identified three locations including two loading areas accessed from Ascot Road and one accessed from Sheffield Road.

The existing bus stop/ shelter on the southern side of Bowral Street would need to be relocated further west to accommodate the proposed access road for the BDHR. This is being done in consultation with the bus company and Council.

The BDHR requires the removal of the existing at grade car park currently accessed from Bowral Street resulting in a loss of 66 parking spaces. The proposal provides an additional 52 spaces on site, this with the additional spaces provided as part of the enabling works, will result in 198 parking spaces on site at completion of the main works. Table E1 shows the parking demand and provision summary during each stage of the redevelopment project.

Table E1: Parking summary

Project Delivery Phase	Peak Parking Demand	Parking Provision	Difference
During Enabling Works	184	182	-2
During Main Works	184	148	-39
Project Completion	198	198	0

As the BDHR is about bringing the current facilities up to standard rather than increasing services, parking calculations are considered high when assessed against the additional services provided. There are parking spaces available on-street with many side streets observed to be less than 50 per cent occupied. As such the additional parking demand to be generated by the additional bed numbers could be accommodated on-street. While this is the case, impact to on-street parking is

recommended to be minimised to reduce walking time for visitors to the hospital and any potential inconveniences for residents and adjacent commercial properties.

As part of the BDHR a total of 198 spaces would be provided at the completion of redevelopment project, which meets the parking demand of the proposal.

The SSDA provides a total of 10 accessible parking spaces which complies with the Building Code of Australia (BCA).

While it is recognised that the site's location somewhat limits the practicality of using sustainable transport modes, there remains potential for improved utilisation of public transport and associated provision of sustainable transport infrastructure.

The BDHR includes works that will likely result in a redistribution of pedestrian activity across the hospital. Wayfinding signage at key locations surrounding the hospital and within hospital grounds would also show visitors/ patients the best route and entries for specific hospital facilities.

Table of Contents

Executive Summary	i
1. Introduction	1
1.1 Background	1
1.2 Purpose of this Report	1
1.3 References	3
2. Existing Conditions	4
2.1 Road Network	6
2.2 Surrounding Road Network	6
2.3 Site Access and Traffic Generation	7
2.4 Traffic Volumes	8
2.5 Intersection Operation	9
2.6 Car Parking	10
2.7 Loading Areas	14
2.8 Staff Travel Mode	15
2.9 Public Transport	15
2.10 Pedestrian and Bicycle Infrastructure	16
2.11 Crash Data	16
3. Development Proposal	18
3.1 Overview	18
3.2 Hospital Inpatient Beds	20
3.3 Vehicle Access	20
3.4 Car Parking	20
3.5 Pedestrian Facilities	21
3.6 Bicycle Facilities	21
3.7 Substation Access	23
4. Traffic and Access	24
4.1 Transport Considerations	24
4.2 Transport Impact Assessment	26
4.3 Future Site Traffic Generation	26
4.4 Other Approved Development	27
4.5 Public Transport Impact	27
4.6 Construction Traffic Impact	27
5. Car Parking	28
5.1 Car Parking Requirements	28
5.2 Adequacy of Parking Supply	29

5.3	Accessible Parking	30
5.4	Design Review	30
5.5	Overall Car Parking Strategy	30
5.6	Completion of Main Works	31
6.	Sustainable Transport Infrastructure	32
6.1	Walking and Cycling Infrastructure	32
6.2	Public Transport	32
6.3	Crime Prevention through Environmental Design (CPTED)	33
7.	Work Travel Plan	34
7.1	Purpose of a Work Travel Plan	34
7.2	Typical Challenges for Regional Hospitals	34
7.3	Travel Demand Strategies	34
8.	Consultations	36
9.	Conclusion	37

Appendices

- A: Survey Results
- B: SIDRA INTERSECTION Results
- C: Wingecaribee Council – Parking Occupancy Summary

Figures

Figure 2.1:	Subject site and its environs	4
Figure 2.2:	Bowral and District Hospital aerial plan	5
Figure 2.3:	Bowral District Hospital existing site plan	5
Figure 2.4:	Bowral Street (looking east)	7
Figure 2.5:	Sheffield Road (looking south)	7
Figure 2.6:	Ascot Road (looking west)	7
Figure 2.7:	Mona Road (looking north)	7
Figure 2.8:	Site access locations	8
Figure 2.9:	Existing weekday AM/ PM peak hour traffic volumes (2018)	9
Figure 2.10:	Surveyed car parking study area	11
Figure 2.11:	Parking occupancy	12
Figure 2.12:	Existing loading areas	14
Figure 2.13:	Location and extents of Travel Zone 6002	15
Figure 2.14:	Bowral bicycle network	16
Figure 2.15:	Crash history (2012-2016)	17

Figure 3.1:	SSDA design proposed site layout	19
Figure 3.2:	Location of new car parking areas	21
Figure 3.3:	Proposed pedestrian and bicycle facilities	22
Figure 3.4:	End of trip facilities	23
Figure 4.1:	General/emergency vehicle access route	25
Figure 4.2:	Service vehicle access routes	26

Tables

Table E1:	Parking summary	ii
Table 1.1:	Secretary's Environmental Assessment Requirement	2
Table 2.1:	SIDRA INTERSECTION level of service criteria	10
Table 2.2:	Existing operating conditions (2018)	10
Table 2.3:	Existing on-site parking demand – Bowral and District Hospital	12
Table 2.4:	Existing on-street parking demand	13
Table 2.5:	Existing on-site parking demand - private hospital	13
Table 2.6:	JTW, Place of Work at TZ 6002	15
Table 3.1:	Development schedule	19
Table 8.1:	Consultation	36

1. Introduction

1.1 Background

The objective of the Bowral and District Hospital Redevelopment (BDHR) Planning Project, which forms part of the Sydney South West Local Health District (SSWLHD), is to undertake planning for the redevelopment of the hospital with the primary aim of responding to previously identified clinical priorities.

Health Infrastructure (HI) engaged GTA Consultants (GTA) to provide traffic and transport input into the State Significant Development Application (SSDA) stage for the BDHR.

The Strategic and Healthcare Services Plan identified the BDHR as a priority due to the imminent need to address the poor quality of aging buildings and the need to provide additional medical and surgical beds at the hospital and expand the ambulatory care and ED capacity.

The ageing of the Wingecarribee population indicates that additional aged care, rehabilitation and palliative care beds will be required within the next decade. Community health also needs redevelopment.

1.2 Purpose of this Report

This report sets out an assessment of the anticipated transport conditions near BDH and provides strategic design advice to ensure an appropriate transport network. This includes consideration of the following:

- a detailed review of existing traffic and parking conditions both on-site and surrounding the site
- provision of adequate parking supply to meet any such future demands
- traffic generation of future demands
- site accessibility
- service vehicle requirements
- pedestrian and bicycle considerations
- identification of the transport related constraints and opportunities.

This report addresses all transport and accessibility impacts (construction and operational) included in Secretary's Environmental Assessment Requirements (SEARs) – Schedule 2 of the Environmental Planning and Assessment Regulation 2000, as referenced by Table 1.1.

Table 1.1: Secretary's Environmental Assessment Requirement

Key traffic/ transport issue	Requirement	Relevant Report Section
Transport and Accessibility Impacts (Construction and Operational)		
Include a transport and accessibility impact assessment, which details, but not limited to the following:		
○ accurate details of the current daily and peak hour vehicle, public transport, pedestrian and cycle movement and existing traffic and transport facilities provided on the road network located adjacent to the proposed development		Section 2.1, 2.9 and 2.10
○ an assessment of the operation of existing and future transport networks including the bus network and their ability to accommodate the forecast number of trips to and from the development		Section 2.5, 4.3, 4.4 and 4.5
○ details of estimated total daily and peak hour trips generated by the proposal, including vehicle, public transport, pedestrian and bicycle trips		Section 2.3, 4.3 and 4.5
○ the adequacy of public transport, pedestrian and bicycle networks and infrastructure to meet the likely future demand of the proposed development		Section 4.2 and 6.1
○ the impact of the proposed development on existing and future public transport infrastructure within the vicinity of the site in consultation with Roads and Maritime Services and Transport for NSW and identify measures to integrate the development with the transport network		Section 4.5, 6.2 and 7
○ details of any upgrading or road improvement works required to accommodate the proposed development		Section 4.3 and 4.4
○ details of travel demand management measures to encourage sustainable travel choices and details of programs for implementation		Section 5.5 and 6.1
○ the impact of trips generated by the development on nearby intersections, with consideration of the cumulative impacts from other approved developments in the vicinity and for a 10 years horizon, and the need/associated funding for upgrading, or road improvement works, if required		Section 4.3 and 4.4
○ the proposed active transport access arrangements and connections to public transport services		Section 3.6
○ the proposed access arrangements, including car and bus pick-up/drop-off facilities, and measures to mitigate any associated traffic impacts and impact on public transport, pedestrian and bicycle networks, including pedestrian crossings and refuges and speed control devices and zones		Section 3.3, 3.4, 4.3 and 6
○ measures to maintain road and personal safety in line with Crime prevention through environmental design (CPTED) principles		Section 6.3
○ the proposed car and bicycle parking provision, including end-of-trip facilities, which must be taken into consideration of the availability of public transport and the requirement of Council's relevant parking codes and Australian Standards		Section 3.4 and 3.6
○ proposed bicycle parking facilities in secure, convenient, accessible areas close to main entries incorporating lighting and passive surveillance		Section 3.6
○ details of the proposed number of car parking spaces and compliance with appropriate parking codes and justification for the level of car parking provided on-site		Section 3.4 and 5
○ details of emergency vehicle access arrangements		Section 4.1.1 and Figure 4.1
○ an assessment of road and pedestrian safety adjacent to the proposed development and the details of required road safety measures		Section 2.11
○ service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times).		Section 4.1.3 and Figure 4.2

Key traffic/ transport issue	Requirement	Relevant Report Section
Construction Traffic Management Plan		
	<ul style="list-style-type: none">assessment of cumulative impacts associated with other construction activities	Section 4.6
	<ul style="list-style-type: none">an assessment of road safety at key intersection and location subject to heavy vehicle construction traffic movements and high pedestrian activity	
	<ul style="list-style-type: none">details of construction program detailing the anticipated construction duration and highlighting significant and milestone stages and events during the construction process	
	<ul style="list-style-type: none">details of anticipated peak hour and daily construction vehicle movements to and from the site	
	<ul style="list-style-type: none">details of access arrangements of construction vehicles, construction workers to and from the site, emergency vehicles and service vehicle	
	<ul style="list-style-type: none">details of temporary cycling and pedestrian access during construction	
	<ul style="list-style-type: none">details of the proposed construction vehicle access arrangements at all stages of construction	
	<ul style="list-style-type: none">traffic and transport impacts during construction, including cumulative impacts associated with other construction activities, and how these impacts will be mitigated for any associated traffic, pedestrian, cyclists, parking and public transport, including the preparation of a draft Construction Traffic Management Plan to demonstrate the proposed management of the impact (which must include vehicle routes, number of trucks, hours of operation, access arrangements and traffic control measures for all demolition/ construction activities).	

1.3 References

In preparing this report, reference has been made to the following:

- an assessment of the site and its surrounds
- historical understanding of Bowral and its surrounds
- Wingecarribee Council Local Environment Plan (LEP) 2010
- Wingecarribee Council Bowral Town Development Control Plan (DCP) 2015
- GTA Consultants, Bowral District Hospital Redevelopment, Master Plan Transport Impact Assessment, 2016
- GTA Consultants, Bowral District Hospital Redevelopment, Concept Design Transport Impact Assessment, 2016
- GTA Consultants, Bowral District Hospital Redevelopment, Schematic Design Transport Impact Assessment, 2017
- Australian/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 2: Off-Street Commercial Vehicle Facilities AS/NZS 2890.2:2002
- Australian/ New Zealand Standard, Parking Facilities, Part 6: Off-Street Parking for People with Disabilities AS/NZS 2890.6:2009
- Roads and Maritime Services (Roads and Maritime) Guide to Traffic Generating Developments, 2002
- NSW Planning Guidelines for Walking and Cycling (Department of Planning, 2004)
- Building Code of Australia, 2018
- other documents and data as referenced in this report.

2. Existing Conditions

The existing BDH is located at 97-103 Bowral Street, Bowral, NSW. The site occupies the block bounded by Bowral Street, Sheffield Road, Ascot Road and Mona Road, with around 200 metres frontages to each. The Southern Highlands Private Hospital (private hospital) is also located within the block adjacent to BDH.

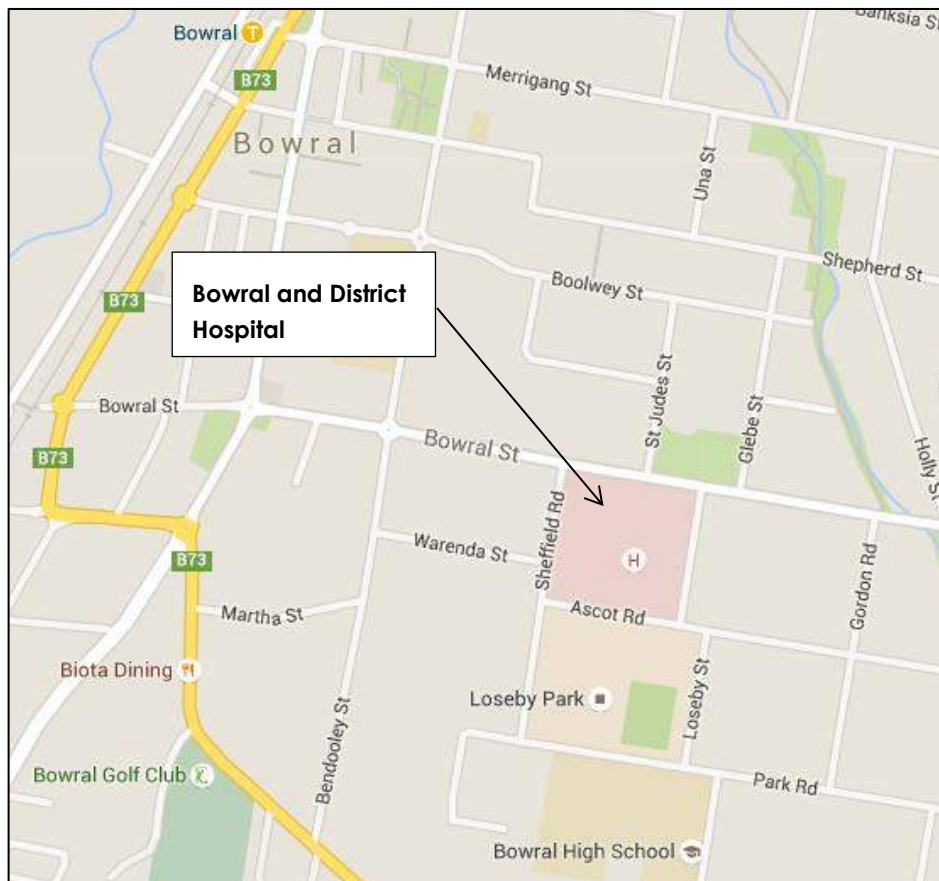
The site currently has a land use classification as SP2 – Infrastructure under the Wingecarribee Local Environment Plan (LEP) 2010 and is labelled in the LEP as a “Health Service Facility.”

Bowral is located around 120 kilometres south west of Sydney on the B73 Highway which connects to the Hume Highway in the north near Aylmerton and extends through to Nowra in the south.

BDH is located around one kilometre from the Bowral Town Centre along Bong Road and Bowral Street.

The location of the subject site and its surrounding environs is shown in Figure 2.1.

Figure 2.1: Subject site and its environs



Base map source: Google Maps (accessed March 2018)

BDH is currently a 91-bed facility and provides a wide range of services, including general medical, obstetrics and gynaecology, paediatric, surgical, orthopaedics, ophthalmology, geriatric and emergency services.

BDH currently has a total of 243 staff working across three shifts on a typical day.

Southern Highlands Private Hospital is a 73-bed facility located in the north-west corner of the site.

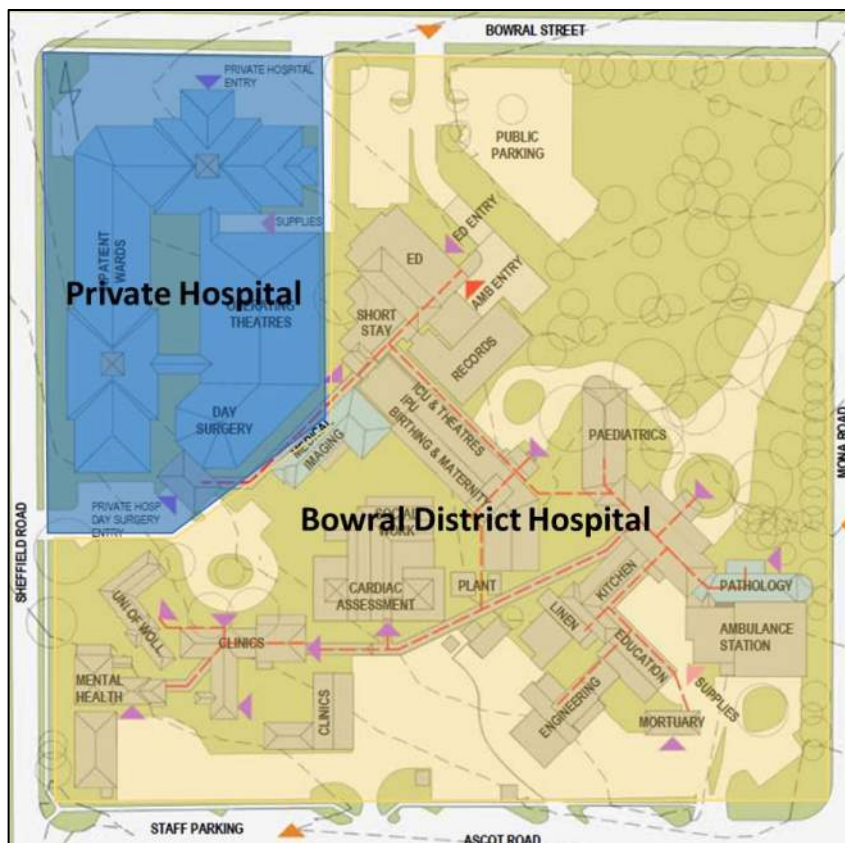
The current layout of the BDH and private hospital site is provided in Figure 2.2 and Figure 2.3.

Figure 2.2: Bowral and District Hospital aerial plan



Base Source: [McConnel Smith and Johnson](#)

Figure 2.3: Bowral District Hospital existing site plan



Base map Source: [McConnel Smith and Johnson](#)

2.1 Road Network

2.1.1 Road Hierarchy

Roads are classified according to the functions they perform. The main purpose of defining a road's functional class is to provide a basis for establishing the policies which guide the management of the road according to their intended service or qualities.

In terms of functional road classification, State roads are strategically important as they form the primary network used for the movement of people and goods between regions, and throughout the State. Roads and Maritime is responsible for funding, prioritising and carrying out works on State roads. State roads generally include roads classified as freeways, state highways, and main roads under the Roads Act 1993, and the regulation to manage the road system is stated in the Australian Road Rules, most recently amended on 19 March 2018.

Roads and Maritime defines four levels in a typical functional road hierarchy, ranking from high mobility and low accessibility, to high accessibility and low mobility. These road classes are:

- **Arterial Roads** – Controlled by Roads and Maritime, typically no limit in flow and designed to carry vehicles long distance between regional centres.
- **Sub-Arterial Roads** – Managed by either Council or Roads and Maritime under a joint agreement. Typically, their operating capacity ranges between 10,000 and 20,000 vehicles per day, and their aim is to carry through traffic between specific areas in a sub region or provide connectivity from arterial road routes (regional links).
- **Collector Roads** – Provide connectivity between local sites and the sub-arterial road network, and typically carry between 2,000 and 10,000 vehicles per day.
- **Local Roads** – Provide direct access to properties and the collector road system and typically carry between 500 and 4,000 vehicles per day.

2.2 Surrounding Road Network

2.2.1 Bowral Street

Bowral Street functions as a collector road in an east-west direction on the northern boundary of the site. Adjacent to BDH, Bowral Street is two-way with one lane in each direction, a marked centreline and unrestricted parking on both sides of the road. The carriageway width is around 11 metres wide, with footpaths are provided on both sides of the road. Bowral Street carries around 6,000 vehicles per day.

2.2.2 Sheffield Road

Sheffield Road functions as a local road in a north south-direction on the western boundary of the site. Adjacent to BDH, Sheffield Road is two-way with one lane in each direction, no line marking and unrestricted parking on both sides of the road. The carriageway width is around 11 metres wide, with footpaths are provided on both sides of the road. Sheffield Road carries around 3,500 vehicles per day.

2.2.3 Mona Road

Mona Road functions as a local road in a north-south direction on the eastern boundary of the site. Adjacent to BDH, Mona Road is two-way with one lane in each direction, no line marking and unrestricted parking only on the western side of the road. The carriageway width is around

nine metres wide, with footpaths are provided on both sides of the road. Mona Road carries around 2,000 vehicles per day.

2.2.4 Ascot Road

Ascot Road functions as a local road in an east-west direction on the southern boundary of the site. Adjacent to BDH, Ascot Road is two-way with one lane in each direction, no road marking and unrestricted parallel parking on the southern side of the road and angle parking provided within the verge area adjacent to BDH. The carriageway width is around 10 metres wide, with a footpath provided on the northern side of the road. Ascot Road carries around 1200 vehicles per day.

The local roads surrounding the Hospital are illustrated in Figure 2.4 to Figure 2.7.

Figure 2.4: Bowral Street (looking east)



Figure 2.5: Sheffield Road (looking south)



Figure 2.6: Ascot Road (looking west)



Figure 2.7: Mona Road (looking north)



Source: Photos taken 9 June 2016

2.3 Site Access and Traffic Generation

Access to BDH is currently provided from all four surrounding roads. The main visitor access and ambulance access is directly from Bowral Street, the main staff parking access is from Ascot Road, and an additional parking area is also provided from Mona Road. Access to the Southern Highlands Private Hospital is provided from both Bowral Street and Sheffield Road.

Emergency vehicles currently access the site via the same entrances as associated staff/ visitor car parking off Bowral Street, which can create potential delays and conflicts at times and presents a potential risk to Hospital operations.

Service vehicles generally access the site through Ascot Road and Sheffield Road as outlined in Section 2.7.

Traffic surveys were undertaken at the site access driveways during the typical weekday AM and PM periods. Based on these results, the site currently generates around 115 vehicles per hour in the AM peak (8:15-9:15am) and 132 vehicles per hour in the PM peak (3:15-4:15pm).

The existing site access driveways are shown in Figure 2.8.

Figure 2.8: Site access locations



Base map source: Google Maps

2.4 Traffic Volumes

Traffic movement counts were undertaken on Thursday 9 June 2016, during the following peak periods:

- morning peak at 6:30 – 9:30am
- afternoon peak at 2:30 – 6:30pm.

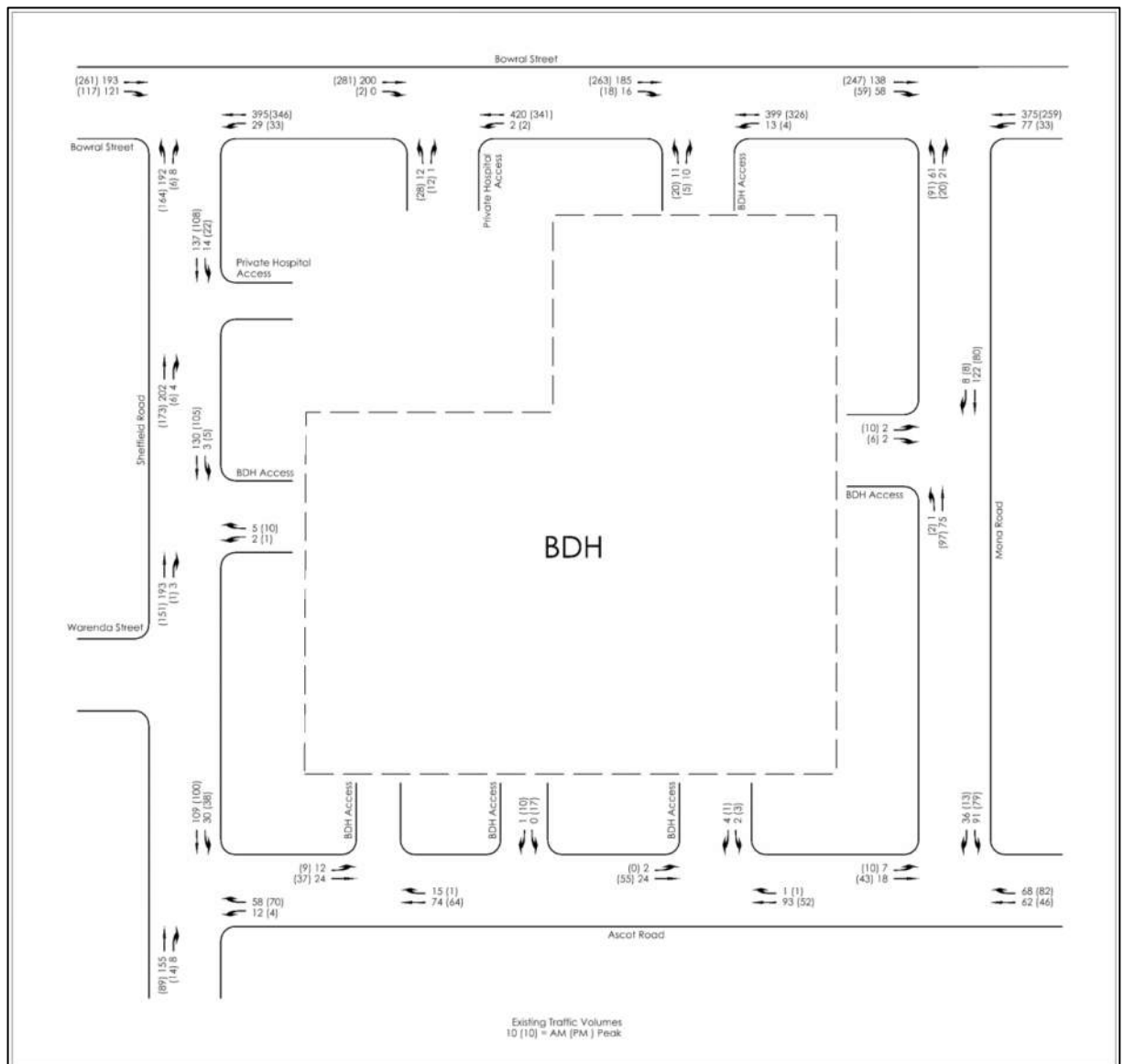
The following intersections were included in the traffic survey:

- Bowral Street/ Sheffield Road
- Bowral Street/ Mona Road
- Sheffield Road/ Ascot Road
- Mona Road/ Ascot Road.

To determine the likely traffic conditions in 2018 an annual growth rate of about 1.5 per cent has been applied to the 2016 peak hour traffic volumes for all intersections. This growth rate was discussed and agreed with both Wingecarribee Council (Council) and Roads and Maritime Services (Roads and Maritime).

The AM and PM peak hour traffic volumes for 2018 are summarised in Figure 2.9.

Figure 2.9: Existing weekday AM/ PM peak hour traffic volumes (2018)



2.5 Intersection Operation

The operation of the key intersections within the study area have been assessed using SIDRA Intersection¹ (SIDRA), a computer-based modelling package which calculates intersection performance.

The commonly used measure of intersection performance, as defined by Roads and Maritime, is vehicle delay. SIDRA determines the average delay that vehicles encounter and provides a measure of the level of service.

¹ Program used under license from Akcelik & Associates Pty Ltd.

Table 2.1 shows the criteria that SIDRA adopts in assessing the level of service.

Table 2.1: SIDRA INTERSECTION level of service criteria

Level of Service (LOS)	Average Delay per vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Sign
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Near capacity	Near capacity, accident study required
E	57 to 70	At capacity, at signals incidents will cause excessive delays	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	Extreme delay, major treatment required

Table 2.2 provides a summary of the existing operation of the intersections surrounding the hospital.

Table 2.2: Existing operating conditions (2018)

Intersection	Peak	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Bowral Street/ Sheffield Road	AM	0.203	9.3	6	A
	PM	0.162	9.3	5	
Bowral Street/ Mona Road	AM	0.094	8.3	3	
	PM	0.103	8.1	3	
Sheffield Road/ Ascot Road	AM	0.072	5.8	2	
	PM	0.074	5.5	2	
Mona Road/ Ascot Road	AM	0.094	5.2	3	
	PM	0.066	5.2	2	

As outlined in Table 2.2, all the intersections surrounding the hospital currently operate satisfactorily, with spare capacity on all approaches.

2.6 Car Parking

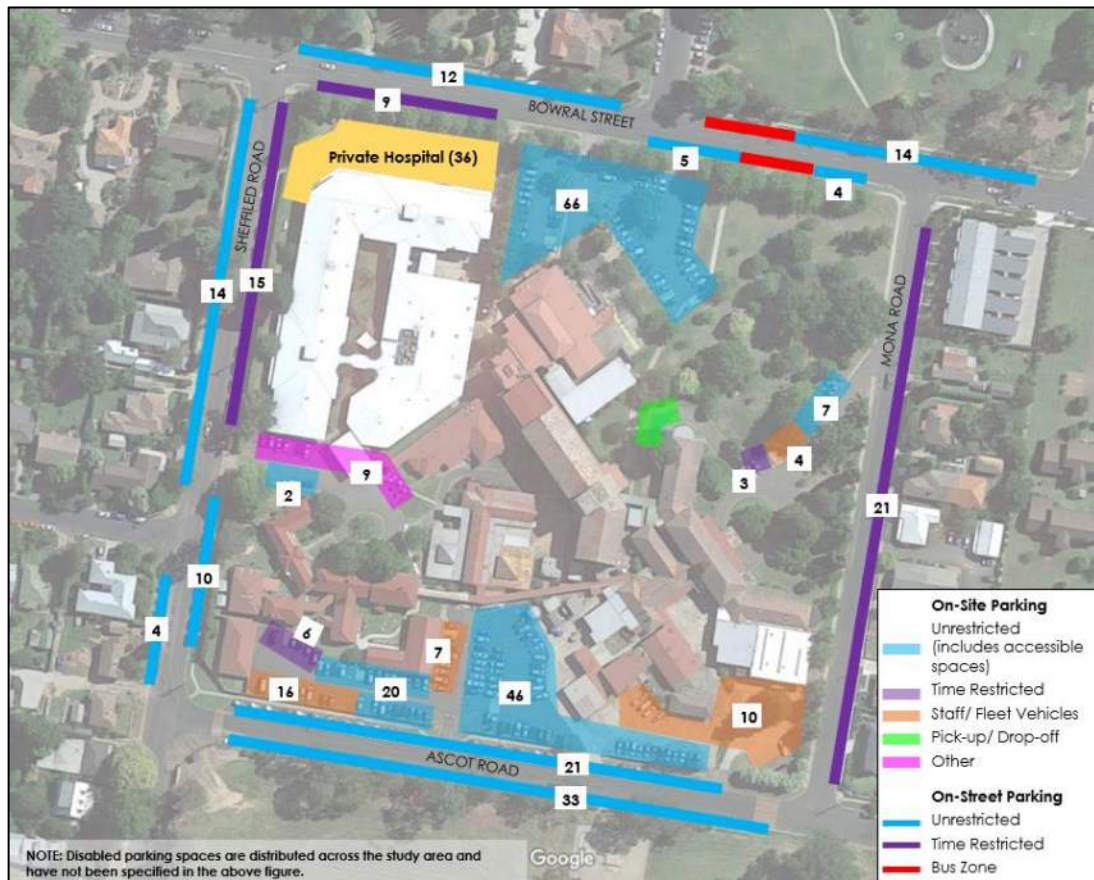
2.6.1 Supply

Currently a combination of on-site and on-street parking is used by hospital staff and patients/visitors for BDH as shown in Figure 2.10.

A total of 196 spaces are provided on-site, with the following breakdown:

- 37 dedicated staff and fleet spaces
- 130 unrestricted public spaces
- 11 accessible spaces
- nine time-restricted public spaces
- nine 'other' dedicated use spaces.

Figure 2.10: Surveyed car parking study area



Adjacent to BDH is the private hospital. Due to the proximity of the private hospital to BDH the current parking supply and demand of the private has been included to determine any potential impact on BDH. The private hospital has a dedicated car park with a total of 36 car parking spaces, with the following breakdown:

- 27 visitor spaces
- 7 staff/ volunteer spaces
- two disabled spaces
- two pick-up/ drop-off spaces.

On-street parking is permitted on each of the frontage roads for BDH and the private hospital. Most of parking is unrestricted parallel parking, with some time restricted parking adjacent to the private hospital on Sheffield Road and along Mona Road which contains a combination of medical, commercial and residential properties. There are also two disabled spaces on Mona Road.

Enabling works is currently occurring on site based on a separate approval to accommodate the enclosure of the build site for the main works. At completion of the enabling works there will be a net increase of two parking spaces on site prior to the main works commencing.

2.6.2 Demand

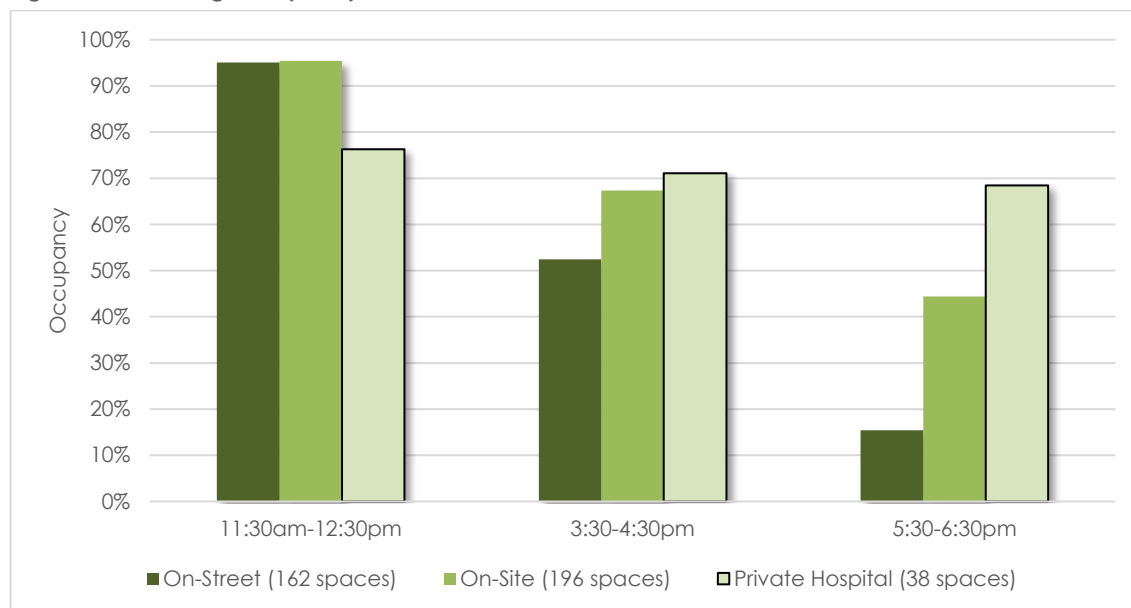
GTA carried out parking demand spot checks within the nominated study area on Thursday 9 June 2016, between the period of 11:30am and 6:30pm.

The cumulative peak parking demand of car parking across the study area (excluding the private hospital) occurred at 12pm and is equal to an occupancy of 341 (95 per cent) parking spaces.

The private hospital car park also peaked at 12pm with an occupancy of 29 (76 per cent) parking spaces, however contained minimal variation throughout the day, with a minimum demand of 26 (68 per cent) parking spaces.

The results of the survey are summarised in Figure 2.11 and provided in Appendix A.

Figure 2.11: Parking occupancy



On-site Demand

The on-site parking demand with a breakdown of parking allocation is presented in Table 2.3. The results indicate that the on-site parking demand is relatively high for the BDH, with a peak demand of 184 (94 per cent) spaces.

Table 2.3: Existing on-site parking demand – Bowral and District Hospital

Restriction	Supply	Demand		
		11:30am-12:30pm	3:30pm-4:30pm	5:30pm-6:30pm
Unrestricted	132	125	90	64
Disabled	11	5	1	0
Time restricted	9	9	9	2
Staff ^[1]	37	38	24	17
Other (X-Ray, Day Surgery Clinic Patients)	6	7	6	3
Total	196	184	130	86

[1] Staff parking includes the provision of fleet vehicle parking including 17 "health service vehicle" spaces and six "reserved for ambulance staff" spaces. It is noted that the hospital manages a fleet of twelve cars and one Patient Transport Vehicle (i.e. ambulance-sized vehicle).

On-street Demand

The on-street parking demand includes Bowral Street, Mona Road, Ascot Road and Sheffield Road, along the hospital frontages. Parking on these streets would be associated with both Bowral and District Hospital as well as the private hospital.

The results indicate that on-street parking demand is relatively high, with a peak demand of 154 (95 per cent) spaces. A breakdown of the on-street car parking survey is provided in Table 2.4.

Table 2.4: Existing on-street parking demand

Restriction	Supply	Demand		
		11:30am-12:30pm	3:30-4:30pm	5:30-6:30pm
Unrestricted	117	115	67	18
Disabled	2	0	0	0
1/2P	3	1	2	0
2P	40	38	16	7
Public-Total	162	154	85	25

Observations indicated that Sheffield Road and time restricted spaces along Bowral Street and Mona Road are largely utilised by visitors. Ascot Road is likely used by staff and potentially visitors to the surrounding properties.

The surrounding road network generally provides unrestricted parking. On-street spaces around 100 metres to the north (St Jude Street and Bowral Street) and west (Warenda Street) of the hospital are well utilised, with occupancy of around 90 per cent. At other locations, occupancy is generally 50 per cent or lower.

Private Hospital Parking Demand

The parking demand of the private hospital was also surveyed to ascertain if there was any overflow from the private hospital to the BDH car parks. The occupancy of the private hospital adjacent to the subject site was generally consistent throughout the day with a recorded demand between 26 (68 per cent) and 29 (76 per cent) spaces. A breakdown of the private hospital parking survey is provided in Table 2.5.

Table 2.5: Existing on-site parking demand - private hospital

Restriction	Supply	Demand		
		11:30am-12:30pm	3:30-4:30pm	5:30-6:30pm
Visitor	27	20	22	21
Doctors Only	4	4	3	2
Volunteers Only	3	3	1	2
Disabled	2	1	1	1
Pick-up/ Drop off	2	1	0	0
Total	38	29	27	26

Site observations did not see the car park fully occupied during the survey period as outlined in Table 2.5. It appeared during the survey that the remaining parking demand for the private hospital is accommodated by nearby on-street parking, including at Sheffield Road, Warenda Street and Bowral Street, within 100 metres of the hospital. It is possible that some of the on-site parking associated with BDH may be used for the private hospital, however based on observations and parking being available throughout the day adjacent to the private hospital, it is not considered that the private hospital is a significant contributor to parking demand/ occupancy on the BDH site.

Parking Demand Summary

The BDH generates a peak on-site parking demand of 184 spaces (94 per cent occupancy).

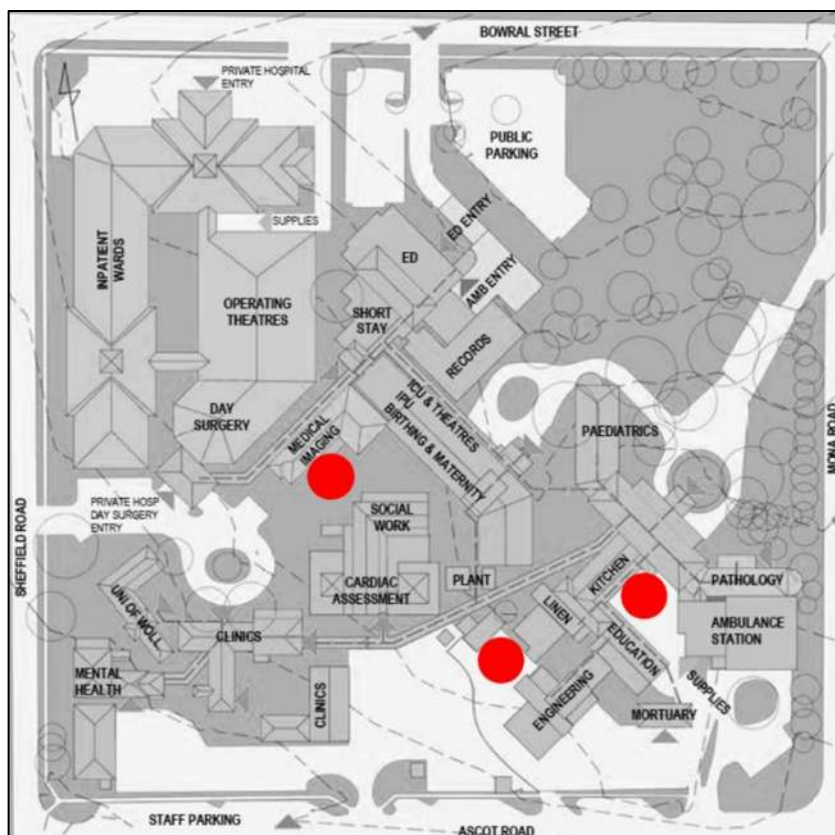
Based on observations, BDH generates additional parking demand on the frontage streets of Bowral Street, Mona Road and Ascot Road. On street parking on Sheffield Road was observed to be largely associated with the private hospital.

2.7 Loading Areas

Site observations identified three locations including two loading areas accessed from Ascot Road and one accessed from Sheffield Road. The location of the existing loading areas is shown in Figure 2.12.

Services vehicles are typically vans, utes and small to medium rigid vehicles. Deliveries are typically spread throughout the day and have minimal impact with peak periods.

Figure 2.12: Existing loading areas

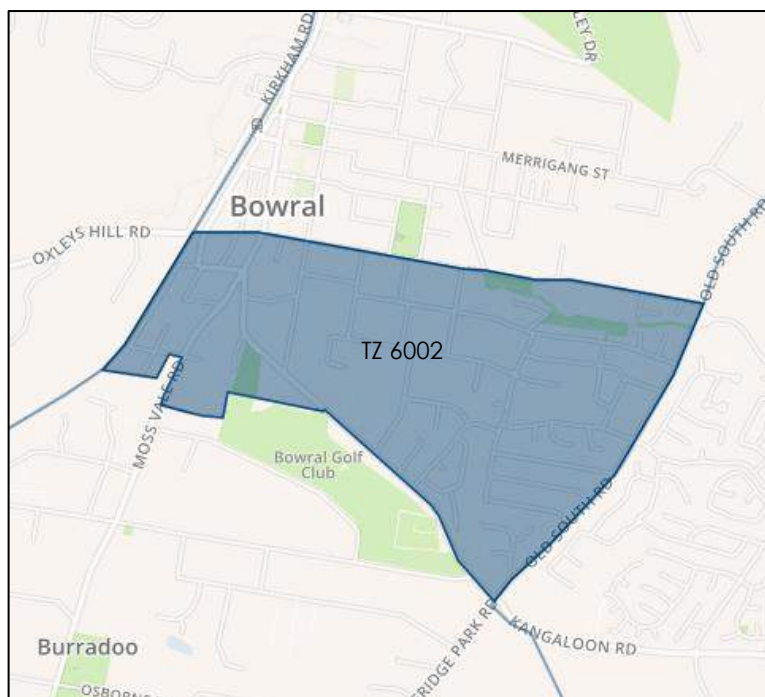


Base source: TSA Management, 29/07/2016

2.8 Staff Travel Mode

2011 census data from Bureau of Transport Statistics, shows the seven existing Journey to Work (JTW) patterns in the area. BDH is contained in travel zone 6002 as shown in Figure 2.13.

Figure 2.13: Location and extents of Travel Zone 6002



Source: JTW Explorer, Bureau of Transport Statistics, 05/12/2017

JTW data as summarised in Table 2.6 indicates that the main mode of travel in the area is by car, with 87 per cent driving to work and six per cent as passengers in a vehicle.

Table 2.6: JTW, Place of Work at TZ 6002

Mode	Mode Share (%)
Vehicle Driver	87
Vehicle Passenger	6
Walked Only	3
Train	1
Bus	0
Mode not stated	2
Other	1
Total	100

Data source: JTW Explorer, Bureau of Transport Statistics, 05/12/2017

2.9 Public Transport

The BDH is currently serviced by at least four bus services operated by Berrima Bus lines. Bus services provide local connections to Bowral and outer areas including Mittagong and Moss Vale. Each service generally provides hourly services on weekdays and limited number of services on a weekend.

Bowral Train Station is located around one kilometre from BDH. It is part of the Southern Highlands Line and the Southern NSW Line. Services are generally provided hourly, with half-hourly services provided in the peak periods.

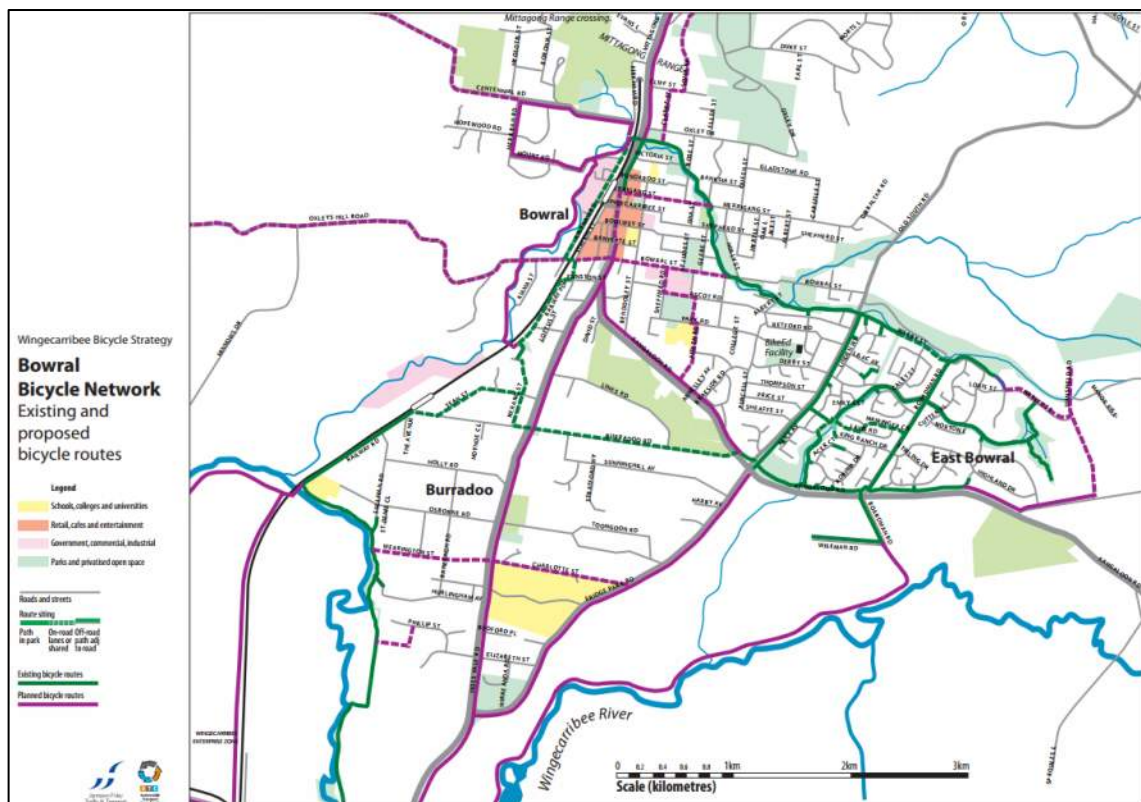
2.10 Pedestrian and Bicycle Infrastructure

BDH is a 20-minute walk from Bowral Railway Station and town centre. Footpaths are provided on most roads on route to the town centre.

A walking track/ cycling route is also available along Mittagong Creek, which runs between the town centre and east Bowral. The track crosses Bowral Street around 300 metres from the hospital.

The cycling network at Bowral is shown in Figure 2.14.

Figure 2.14: Bowral bicycle network



Source: <http://www.wsc.nsw.gov.au/uploads/823/bowraldetailmap.pdf>, accessed 05/12/2017

2.11 Crash Data

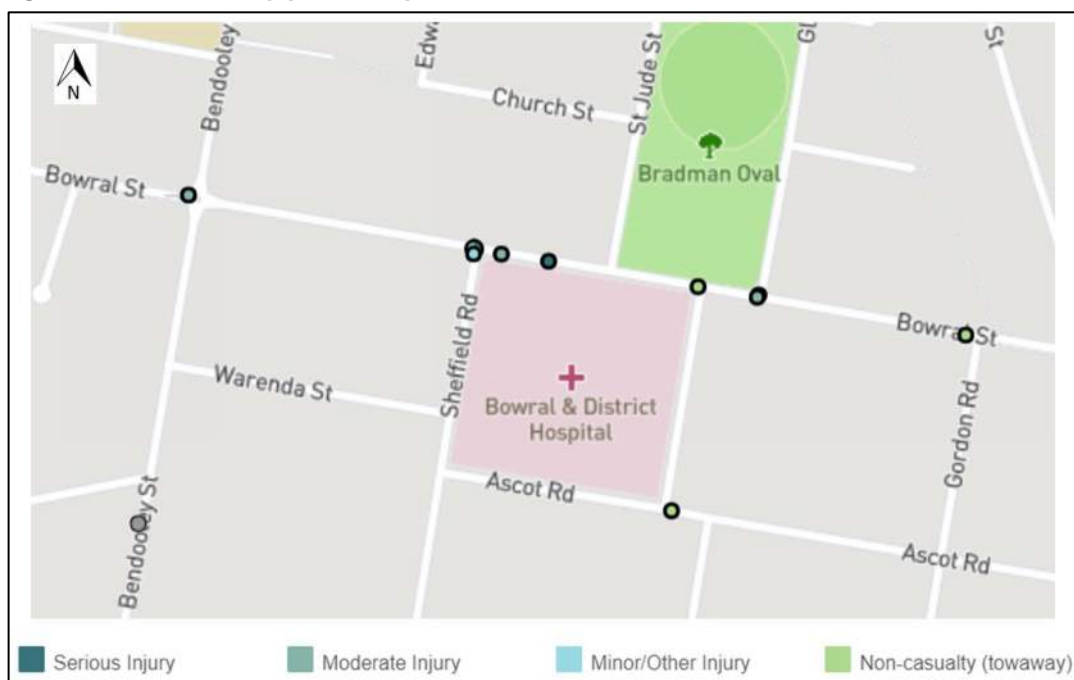
Crash data for the roads around BDH has been obtained from Roads and Maritime. The crash data relates to the latest five-year period to 2016.

Within this period, there have been 10 crashes in vicinity of the hospital. The reported crashes do not include any fatalities. A summary of crash history is provided in the following and shown in Figure 2.15:

- three of the 10 crashes occurred at the Bowral Street/ Sheffield intersection with following characteristics:
 - one crash involved a pedestrian walking across the carriageway and resulting in a serious injury
 - one crash involved a truck rear-ending a car
 - the other involved opposing vehicle movements across the intersection.
- a crash occurred on Sheffield Road within 30 metres from the Sheffield Road/ Bowral Street intersection involving a car leaving the carriageway during wet weather

- a crash occurred on Bowral Street within 20 metres from the Sheffield Road/ Bowral Street intersection involving a car leaving the carriageway
- a crash occurred on Ascot Road, within 10 metres from the Mona Road/ Ascot Road intersection involving a car leaving the carriageway
- a crash occurred on Bowral Street between a car emerging from the BDH driveway and a westbound vehicle
- three crashes occurred at the intersection of Glebe Street/ Bowral Street with the following characteristics:
 - one rear-end for cars travelling southbound on Glebe Street
 - two crash involving opposing vehicle movements within the intersection.

Figure 2.15: Crash history (2012-2016)



Source: Roads and Maritime <http://roadsafety.transport.nsw.gov.au/statistics/interactivecrashstats>, accessed 07/12/2017

3. Development Proposal

3.1 Overview

The Strategic and Healthcare Services Plan states that the BDHR is a priority due to the imminent need to address the poor quality of ageing buildings and the need to provide additional medical and surgical beds in the hospital and expand the ambulatory care and ED capacity.

The ageing of the Wingecarribee population indicates that additional aged care, rehabilitation and palliative care beds will be required within the next decade. Community Health also needs redevelopment.

The development proposal as part of this scope intends to potentially address:

- adult medical inpatient beds (acute, sub-acute and mental health)
- surgical beds and perioperative suite
- ED
- high dependency unit/ intensive care.

This proposal includes following:

- a new main entry
- new inpatient units comprising 34 acute medical/ surgical beds, two mental health beds
- 10 new sub-acute beds
- two medical day only beds
- eight bed Close Observation Unit
- seven bed Maternity Unit
- five bed Paediatric Unit
- perioperative Suite including two new Theatres and one Procedure Room and surgical day only beds
- linkways and connections back to existing buildings and supporting services in the retained buildings
- a reconfigured public and ambulance entry into ED which allows for delivery of the proposal and subsequent relocation of the ED in a future stage
- on-grade car parking and drop off facilities, and overall improved access and wayfinding throughout the campus
- upgrades to IT and engineering services infrastructure supporting the BDHR.

Figure 3.1 provides an understanding of the proposed footprint for the SSDA, which includes three levels. The proposed uses and areas are summarised in Table 3.1.

Figure 3.1: SSDA design proposed site layout



Source: MSJ Architects, 23/05/2018

Table 3.1: Development schedule

Use	Size (m ²)
Inpatient Unit (IPU)	1,720
Close Observation Unit (COU)	399
Perioperative	1,079
Paediatric	435
Maternity	649
Front of House	155
Travel and Engineering	1,553
TOTAL	5,990

The proposed development includes a net increase in gross floor area (GFA) of around 5,990 square metres.

3.2 Hospital Inpatient Beds

The BDHR remains relatively static in terms of the number of inpatient beds, with the focus being on building renewal and provision, enhancement and/ or modernisation of other services. The proposal provides an overall provision of 94 beds and therefore a net increase of three beds from the existing situation.

3.3 Vehicle Access

The BDHR proposes a new public access which is separate from the ED access. The separation of uses, with respect to emergency vehicle arrangements and manoeuvring, removes the potential for vehicle conflicts and delays.

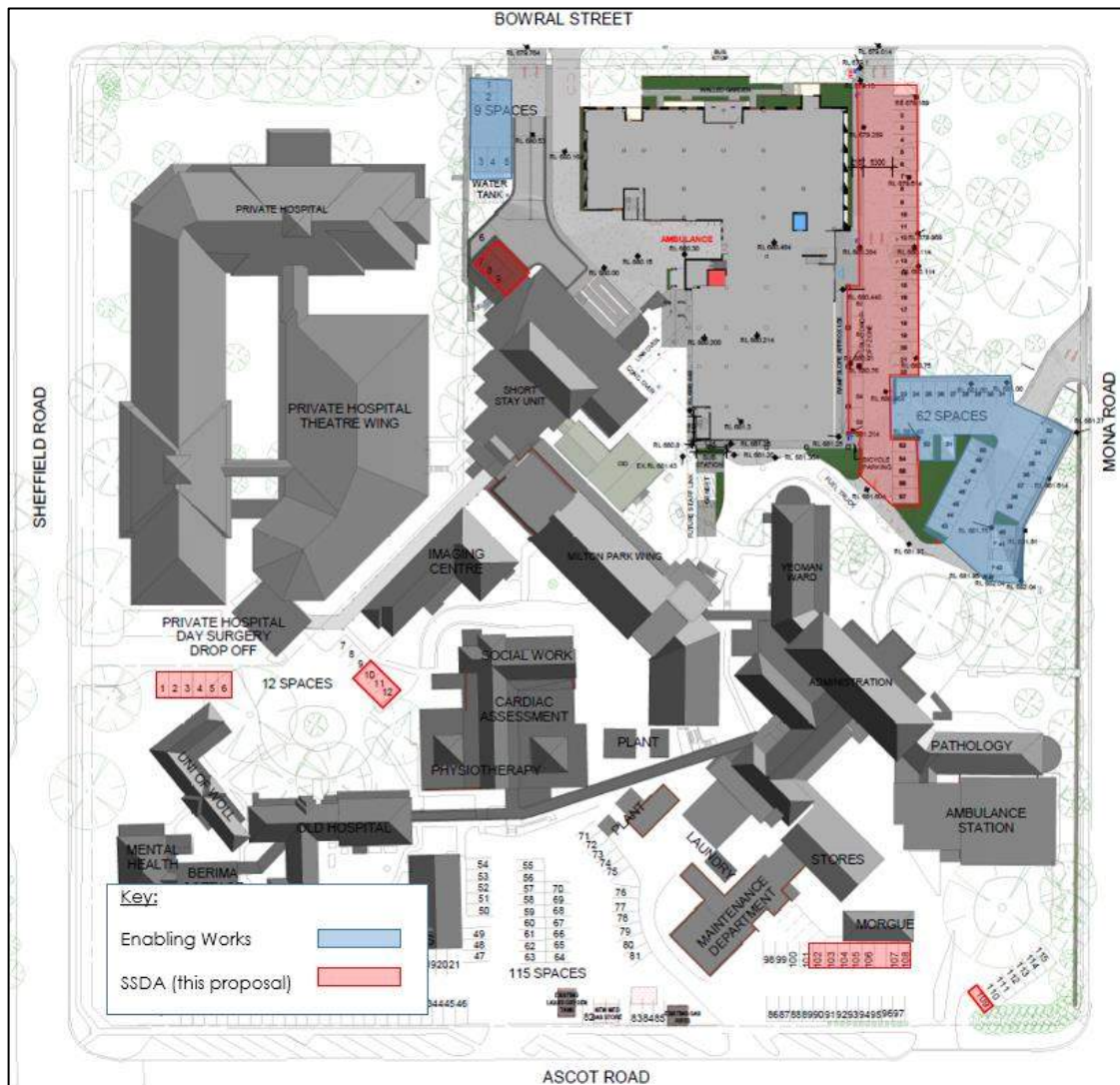
3.4 Car Parking

The BDHR requires the removal of the existing at grade car park currently accessed from Bowral Street resulting in a loss of 66 parking spaces. To accommodate this loss of parking spaces, the proposal provides new parking areas. Additional parking from Mona Road and a short-term drop off area near emergency are currently being constructed as part the enabling works. The SSDA design includes parking along the proposed access road which connects Bowral Street through to the recently constructed car park accessed from Mona Road as shown in Figure 3.2.

Modifications are proposed in the car park accessed from Ascot Road to obtain an additional nine parking spaces and an additional seven parking spaces are proposed in the driveway accessed from Sheffield Road towards the Imaging building

This proposal provides an additional 52 spaces on site, this with the additional spaces provided as part of the enabling works, results in 198 parking spaces on site at completion of the main works. Figure 3.2 shows the location of proposed new car parking areas. The car parking provision requirement is discussed in Section 5 of this report.

Figure 3.2: Location of new car parking areas



Base map source: MSJ Architects, 23/05/2018

3.5 Pedestrian Facilities

The existing pedestrian infrastructure and connections on-site will generally be maintained. At the location of the proposed new buildings, existing infrastructure will be replaced with new pedestrian links, including a path from the new development to the existing buildings. Figure 3.3 provides an understanding of the proposed pedestrian facilities.

3.6 Bicycle Facilities

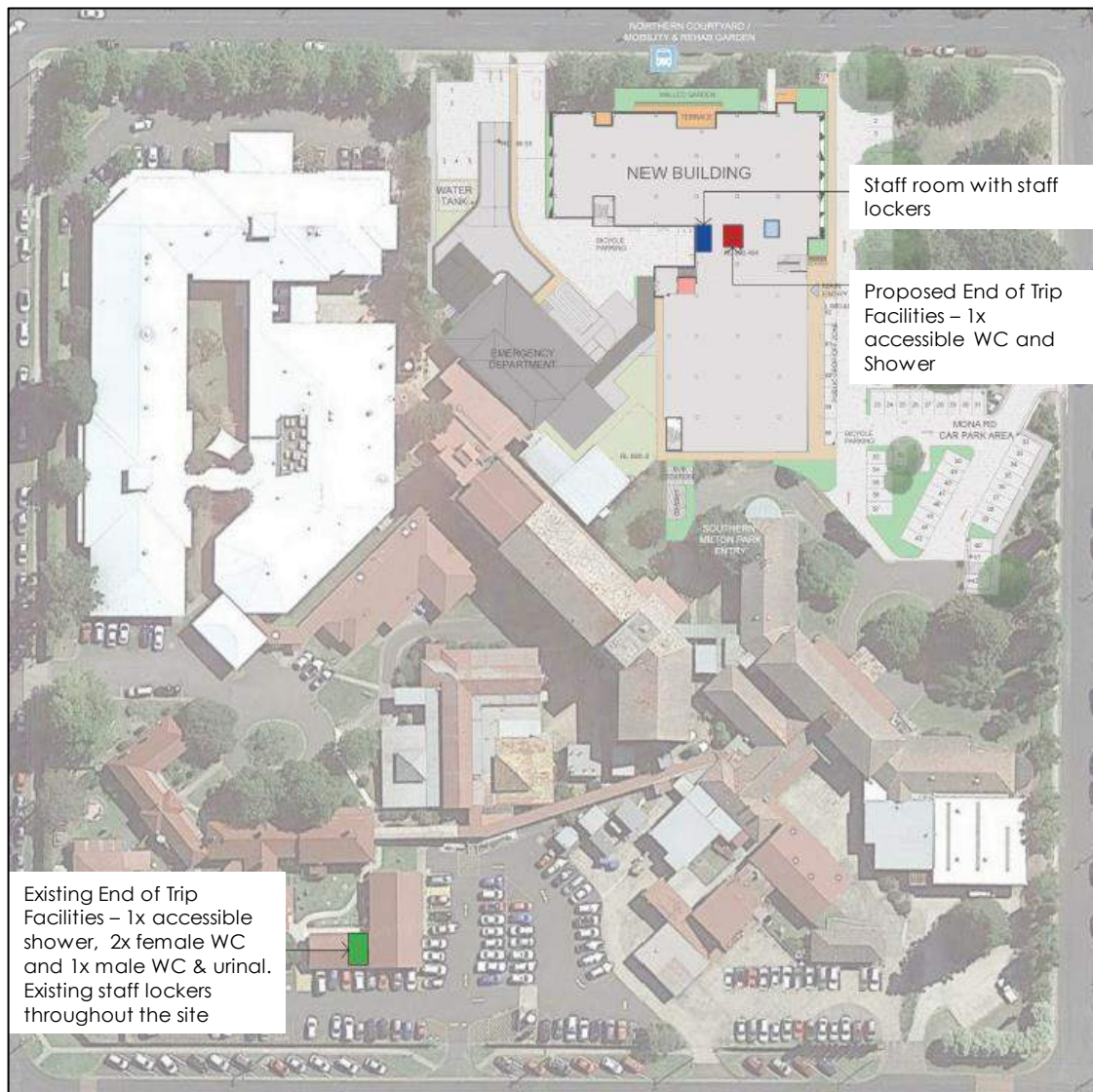
Council's DCP does not provide specific requirements for bicycle provision or end of trip facilities. To promote active transport, the proposal would provide the provision of bicycle loops to cater for around 10 bicycles. Figure 3.3 provides an understanding of the proposed bicycle facilities, with Figure 3.4 showing existing and proposed end of trip facilities. The additional facilities are considered appropriate to accommodate the redevelopment.

Figure 3.3: Proposed pedestrian and bicycle facilities



Base map source: MSJ Architects, 29/06/2018

Figure 3.4: End of trip facilities



Base map source: MSJ Architects, 26/06/2018

3.7 Substation Access

The proposed development requires a substation to the south of the new building near the Milton Park Wing. The entry/ exit route for service vehicles accessing the substation will be from Mona Road.

4. Traffic and Access

4.1 Transport Considerations

The key transport features of the BDHR are presented in Figure 4.1 and include:

- Separated ED access and drop off area from Bowral Street
- 90-degree angled parking (and two parallel spaces) along the eastern side of the new public access road connecting through to a new additional parking area also accessed from Mona Road.

The BDHR would provide suitable access for all users to the new building while separating users as much as practical.

4.1.1 Emergency Department Access

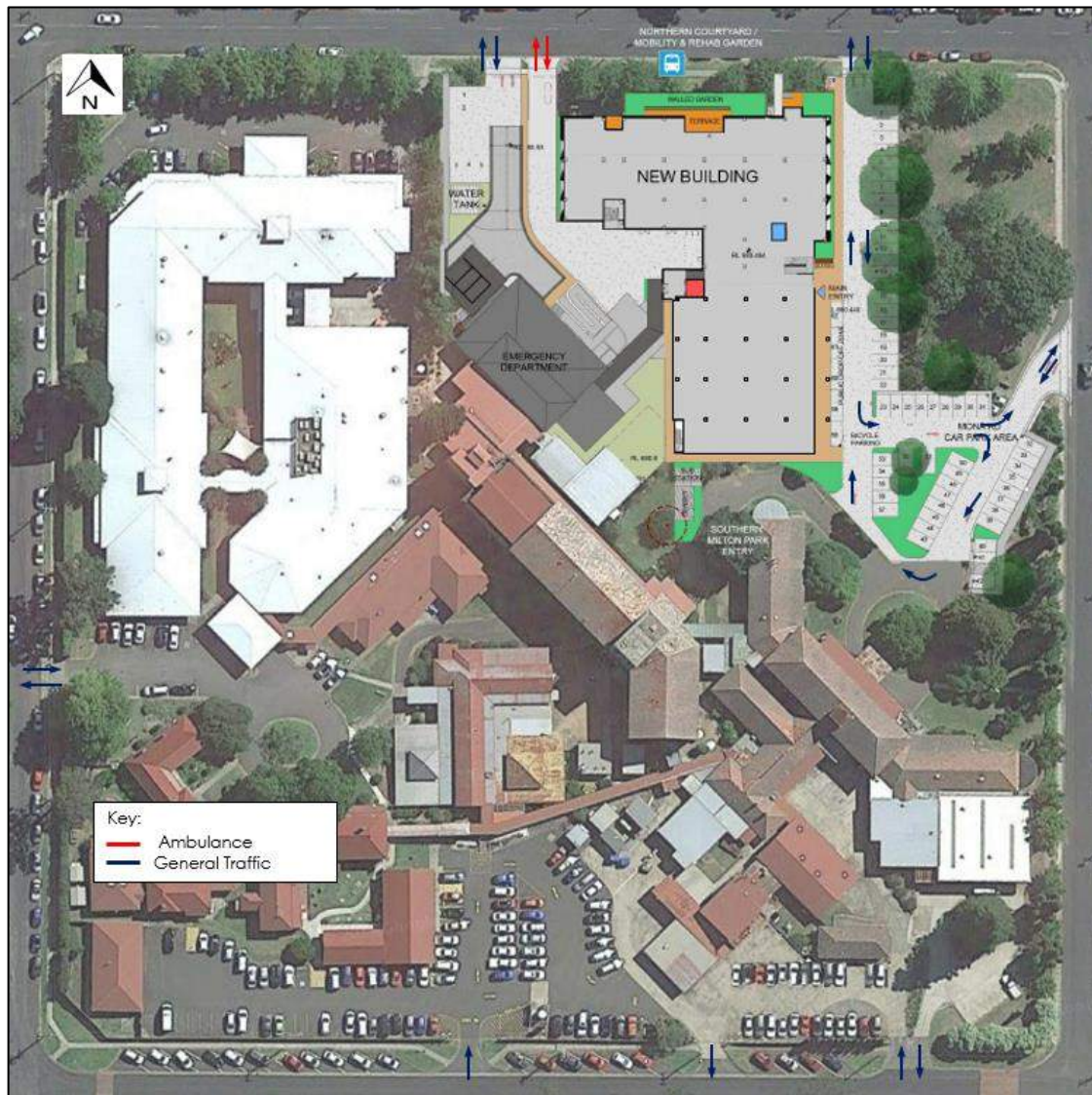
Access to the ED would be provided from Bowral Street on the western side of the new building. This access would be dedicated for emergency vehicles and separated from the public access which would assist in improving emergency vehicle access to the ED.

The ED access is shown in Figure 4.1.

4.1.2 General Vehicle Access

The proposal provides a two-way entry/ exit arrangement at both Bowral Street and Mona Road. The proposed route for general vehicle access/ egress is shown in Figure 4.1.

Figure 4.1: General/emergency vehicle access route

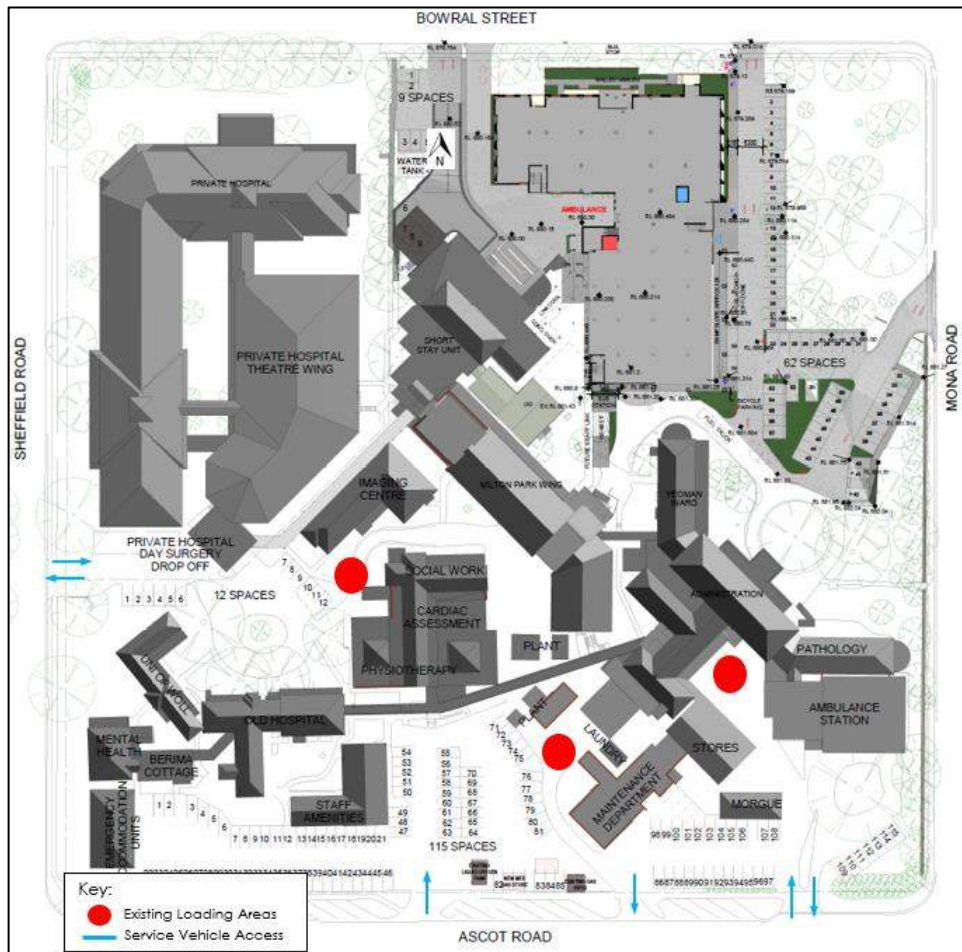


Base map source: MSJ Architects, 23/05/2018

4.1.3 Service Vehicles

As discussed in Section 2.7 service vehicles access the site in three locations including two loading areas accessed from Ascot Road and one accessed from Sheffield Road. No changes are proposed to current loading arrangements as part of the BDHR. Figure 4.2 shows the service vehicle access route to the existing loading areas of the BDH. Services vehicles are typically vans, utes and small to medium rigid vehicles. Deliveries are typically spread throughout the day and have minimal impact with peak periods.

Figure 4.2: Service vehicle access routes



Base map source: MSJ Architects, 23/05/2018

4.2 Transport Impact Assessment

As detailed in Section 2.4, traffic surveys were undertaken at the site access driveways on Thursday 9 June 2016. Based on these results, the site currently generates around 115 vehicles per hour in the AM peak (8:15-9:15am) and 132 vehicles per hour in the PM peak (3:15-4:15pm).

It is noted however, that the above surveyed traffic volumes in and out of the site does not include traffic generated to on-street parking.

4.3 Future Site Traffic Generation

It is difficult to determine the peak traffic generation, noting the on-street parking demand associated with the hospital. On this basis, the Roads and Maritime Services (Roads and Maritime) *Guide to Traffic Generating Developments*, 2002 (Roads and Maritime Guide) has been referenced to understand the impact of the proposed development.

The Roads and Maritime Guide rate considered to be the most appropriate for this site is the rate provided for private hospitals. The following rates are based on the number of beds and the average number of staff per weekday shift:

- Peak Vehicle Trips (PVT) = $-14.69 + 0.69B + 0.31ASDS$
- Morning Vehicle Trips (MVT) = $-10.21 + 0.47B + 0.06ASDS$
- Evening Vehicle Trips (EVT) = $-2.84 + 0.25B + 0.40ASDS$

where 'B' represents the number of beds proposed and 'ASDS' is the average staff per day shift.

The trip generation rates were developed using survey data collected by Roads and Maritime in 1994 from 19 private hospitals across the Sydney region. The hospitals surveyed had between 30 to 99 beds and an average day shift workforce of between 10 and 102 employees.

Of the 19 hospitals surveyed, the majority recorded their respective daily traffic peak (PVT) between 3pm and 4pm. This time generally coincided with a staff shift change at the surveyed hospitals and would coincide with the start of the on-road peak near the site.

It should also be noted that of the 19 hospitals surveyed, an average of 87 per cent of people travelling to each hospital did so by private car and the mode share attributed to car-based trips ranged from 67 per cent to 98 per cent. Average vehicle occupancy was 1.3 persons per vehicle.

The Roads and Maritime rates have been applied to the BDHR. The existing hospital has a total of 91 beds (including 10 being nursery beds), the proposal provides a total of 94 beds (including seven nursery beds), resulting in an overall increase in three beds (including nursery beds). When excluding the nursery beds there is an increase of six beds. Given that the total bed numbers include seven nursery beds, which are not expected to generate additional trips, the trip generation has been calculated based on 87 beds instead of 94 beds in total. When calculating the existing and proposed scenarios based Roads and Maritimes PM peak calculation the expected peak hour increase in traffic generation would result in around two additional trips per hour.

This would increase the existing on-site traffic generation of PM peak from 132 vehicles per hour to 134 vehicles per hour. This is a negligible increase in traffic generation. Therefore, the proposed redevelopment is not anticipated to have any notable impacts to the surrounding road network. In discussion with Council and Roads and Maritime it was agreed that due to the negligible increase in traffic generation there was no requirement to undertake any further traffic modelling or analyse the forecasted ten-year horizon.

4.4 Other Approved Development

A review of Council's Development Application tracker indicates only minor residential developments near to the BDHR. These are not expected to have any adverse impact on the operation of the surrounding road network.

4.5 Public Transport Impact

The BDHR proposes a new access from Bowral Street. This access is to be located around 45 metres west of the Mona Road intersection. This would impact the existing bus stop/shelter location on the southern side of Bowral Street. As part of the BDHR the bus stop/shelter would be relocated further west on Bowral Street from the proposed access. Approval would be sort through Council's Traffic Committee.

It is not expected that the redevelopment would increase bus patronage, however the current bus network has capacity for the future growth.

4.6 Construction Traffic Impact

A Preliminary Construction Management Plan (PCMP) has been prepared by TSA Management. It is noted that a detailed Construction Traffic Management Plan (CTMP) will be provided by the contractor assigned for the construction of proposed redevelopment.

5. Car Parking

5.1 Car Parking Requirements

The car parking requirements for different development types are set out in the Wingecarribee Shire Council's DCP; however, it does not provide any specific guidance for hospitals. This section outlines the various options for determining suitable car parking requirements for this site based on:

- staffing levels
- number of beds
- increase in GFA
- Roads and Maritime *Guide to Traffic Generating Developments* (2002).

5.1.1 Staffing Levels

Parking requirements can be estimated based on the relationship between current and future staffing levels. Information relating to full-time equivalent (FTE) staffing levels indicates that BDH currently has a total of 243 existing FTE staff. The proposed development does not result in any increase to FTE staff numbers and therefore results in no additional parking requirements for staff.

5.1.2 Car Parking Demand Based on Bed Numbers

The existing site currently contains a total of 91 beds. The proposed development would include an overall increase of three beds, therefore providing 94 beds in total. The total of 94 beds includes nursery beds, as these beds are associated with the maternity beds they are not expected to generate additional parking and therefore the nursery bed numbers have not been included in the parking demand calculation.

For the parking calculation the existing site contains 81 beds (excluding nursery beds) and the proposed development would provide 87 beds (excluding nursery beds), therefore providing an increase of six beds (excluding nursery beds).

Based on the car parking demand survey detailed in Section 2.6.2, the existing site has a peak occupancy of 184 spaces. Based on this, the existing parking requirement rate for the 81 beds can be deduced as 2.3 spaces per bed.

Application of this rate to the proposed additional six beds will generate an additional demand of 14 parking spaces and cumulative demand of 198 parking spaces.

5.1.3 Increase in Gross Floor Area (GFA)

This method is used to determine the parking required based on the correlation between the existing GFA and current parking demand. The percentage increase in GFA is used to provide the percentage increase in parking spaces required. It has been assumed that 50 per cent of additional GFA would generate additional traffic.

This BDHR provides an additional 5,990 square metres GFA and an existing hospital GFA of around 9,542 square metres, the additional proposed expansion represents around 63 per cent of the existing hospital GFA.

Assuming 50 per cent of the additional GFA will generate an actual demand for parking and adopting the estimated existing demand of 184 spaces (Table 2.3), future additional parking demand could total up to 59 spaces.

It is recognised however that the majority of the proposed GFA is to bring existing conditions up to current standards to comply with the Australian Health Facility Guidelines and will not actually be a representative increase in activities on-site. Therefore, this method provides an excessive requirement in parking spaces for the site, but provides valuable input into the overall recommendations for parking on-site.

5.1.4 Roads and Maritime Guidance

The car parking requirements for different development land uses is set out in Council's DCP, however Council's DCP does not provide any specific guidance to hospitals. The Roads and Maritime Guide to Traffic Generating Developments refers to Private Hospitals and hospitals providing less services and lower staffing levels than those at BDH. As such, the Roads and Maritime guidance is not relevant to BDH.

5.2 Adequacy of Parking Supply

The above assessment on parking requirements based on floor area, bed numbers and staffing levels, has provided varied results in estimating the future parking requirement for BDH.

These results correlate to an inconsistent increase in bed numbers, staffing levels and floor area, with:

- staff numbers per shift will remain the same as existing conditions
- around nine per cent increase bed numbers
- up to 63 per cent increase in floor area.

Essentially, the additional floor area proposed as part of the BDHR would not correspondingly increase the operation and utilisation of the hospital. The increase in GFA is to bring existing facilities up to current standards to comply with the Australian Health Facility Guidelines and is not a representative increase in activities on-site. As such, the proposed increase in floor area of BDHR is not an accurate representation of parking demand associated with the redevelopment.

The proposed staff numbers will remain the same.

Based on the bed numbers used for the parking calculation, the proposal would be required to provide a total of 198 on-site parking spaces (184 current demand +14 additional spaces).

As stated the proposed development is more about bringing the current facilities up to standard rather than increasing services and therefore parking calculations are considered high when assessed against the additional services provided. There are parking spaces available on-street with many side streets observed to be less than 50 per cent occupied. As such the additional parking demand to be generated by the additional bed numbers could be accommodated on-street. While this is the case, impact to on-street parking is recommended to be minimised to reduce walking time for visitors to the hospital and any potential inconveniences for residents and adjacent commercial properties.

The proposal would provide a total of 198 spaces at the completion of redevelopment project. This parking provision meets the parking requirement as estimated for the proposal.

5.3 Accessible Parking

The accessible car parking requirements for different development types are set out in the Building Code of Australia (BCA), 2018. The relevant disabled parking requirements are:

- Hospital (non-outpatient area) – one space per 100 parking spaces
- Hospital (outpatient area) – one space per 50 parking spaces up to 1,000 parking spaces and 1 space per 100 parking in excess of 1,000 parking spaces.

The proposal will provide a total of 10 accessible spaces, which is more than the BCA requirement.

5.4 Design Review

The BDHR access and parking layout will be designed in accordance with the requirements of the Australian Standard for Off Street Car Parking (AS2890.1:2004 and AS2890.6:2009). A preliminary design review of the BDHR site plan has been conducted and the relevant recommendations incorporated in the architectural plans.

The design of the existing access from Mona Road has been modified to improve the angle in which the access connects to Mona Road to provide improved sight distances and swept paths for vehicles entering and exiting.

5.5 Overall Car Parking Strategy

5.5.1 Construction of Main Works

During the construction of the main works there would be a shortfall of around 39 parking spaces on site. To manage this shortfall the following strategy is recommended:

- The parking spaces accessed from Ascot Road be restricted to 2P to allow for visitor and public parking and discourage all day staff parking.
- There is currently restricted parking on Mona Road and sections of Bowral Street and Sheffield Road. Where parking is not restricted surrounding the hospital site, it is likely that these are occupied by staff coming early in the morning and parking for all day. Therefore, to encourage visitor and public parking close to the hospital it is recommended to install 2P parking on streets bounding the hospital being Bowral Street, Ascot Road, Mona Road and Sheffield Road. This arrangement would provide an improved environment for short term appointments and visitors at the hospital.
- It is recommended during construction works that staff working day time shifts park in unrestricted on street parking areas such as: Glebe Street, St Jude Street, Church Street, Werenda Street, Sheffield Road (south of Ascot Road), Ascot Road (east of Mona Road) and Loseby Street. Parking surveys undertaken by Council in May 2016 indicate a good amount of on street parking being available in locations within 250 metres of the hospital. Councils parking occupancy plan is provided in Appendix C.
- It is recommended that some parking spaces in the car park accessed from Ascot Road be designated for night time staff. These spaces can be used by visitors/ public during the day and staff overnight.

These proposed arrangements would have some impact to day shift staff, however would assist to alleviate the parking shortfall during the construction stage.

Parking associated with construction workers is addressed in the Construction Traffic Management Plan prepared by TSA Management.

5.6 Completion of Main Works

- At the completion of the main works there would be a total parking provision of 198 parking spaces.
- It is recommended that the new parking areas accessed from Mona Road and Bowral Street be utilised as visitor parking and be restricted to 2P to discourage staff parking in these areas.
- The parking area accessed from Ascot Road could be converted back to unrestricted parking to allow for onsite staff parking. However, it is recommended that this be monitored and determined at the completion of main works.
- To encourage visitor and public parking close to the hospital it is recommended that the 2P parking restrictions on roads surrounding the site, being Bowral Street, Ascot Road, Mona Road and Sheffield Road, recommended during the construction stage remain in place as this arrangement would provide an improved environment for short term appointments and visitors at the hospital. It is noted that any change to parking restrictions would be done with approval through Councils Traffic Committee.

6. Sustainable Transport Infrastructure

While it is recognised that the site's location somewhat limits the practicality of using sustainable transport modes, there remains potential for improved utilisation of public transport and associated provision of sustainable transport infrastructure. This assessment includes consideration of the following:

- bicycle facilities including end of trip facilities for hospital staff and visitors
- walking and cycling network, internal and external to the hospital (links to existing facilities)
- local bus services linking the site with Bowral town centre and regional areas
- expansion of the local bus network.

6.1 Walking and Cycling Infrastructure

BDHR is well serviced by walking and cycling infrastructure connecting the site to the Bowral town centre. BDH is a 20-minute walk from Bowral Railway Station and town centre. A walking track/ cycling route is also available along Mittagong Creek, which runs between the town centre and east Bowral. The track crosses Bowral Street around 300 metres from the hospital.

The BDHR includes works that will likely result in a redistribution of pedestrian activity across the hospital. Wayfinding signage at key locations surrounding the hospital and within hospital grounds would also show visitors/ patients the best route and entries for specific hospital facilities.

While much of this pedestrian activity will occur external to the hospital, it is also important that internal wayfinding signage be provided to direct visitors/ patients from the existing main entry towards the new building via the internal hospital links.

Additional facilities may also include but not necessarily be limited to the following:

- lighting and active/ passive surveillance for personal security along the frontage streets and beyond
- 10km/h speed limits within the hospital to ensure pedestrian amenity and safety.

There are no bicycle parking requirements in the DCP, however to promote sustainable transport bicycle loops to accommodate 10 bicycles are included in the proposal.

6.2 Public Transport

The site is accessible by four bus services provided by Berrima Bus lines and primarily accessed from Bowral Street. Services are generally provided on an hourly basis on weekdays and less frequent in weekends.

It is recognised that the existing services are generally under-utilised, and any changes need to be considered in-light of programs to improve usage rates. Improvements to the bus network including increasing the number of accessible routes could potentially increase the number of staff and visitors who travel by bus. Further, a Work Travel Plan generally aimed to promote the use of public transport may ultimately lead to a further expansion of existing services. An overview Work Travel Plan is provided in Section 7.

6.3 Crime Prevention through Environmental Design (CPTED)

There are four main principles of Crime Prevention Through Environmental Design (CPTED) – natural surveillance, access control, territorial reinforcement and space management. The principles of CPTED can help create a safe and secure environment and assist in minimising the incidence of crime and contribute to perceptions of increased public safety within the hospital site.

It is envisaged that HI would include the CPTED principles as a tool in the infrastructure design, specifically in the parking areas during the detailed design stage. It is proposed that the car park be designed in accordance to the NSW Car Park Guidelines for Crime Prevention.

7. Work Travel Plan

7.1 Purpose of a Work Travel Plan

A facility such as a hospital generates a significant level of transport demand, primarily for private vehicle trips. Travel demand management (TDM) aims to modify travel decisions rather than providing costly infrastructure and additional transport services to support the current and future transport demands. TDM has the following key objectives:

- reduce the need to travel
- reduce the amount of travel
- reduce the impact of travel.

In this regard, a Work Travel Plan (WTP) is a tool that hospitals can use to manage the transport mode choices of their staff. The plan aims to promote and encourage sustainable travel and reduce reliance on the private vehicle. The WTP comprises a list of strategies aimed at encouraging walking, cycling, public transport and car-pooling for travel to and from work and aims at a shift away from the reliance on single occupant vehicle travel.

7.2 Typical Challenges for Regional Hospitals

Most staff activity associated with regional hospitals occurs via vehicles due to the nature of staff shift times and the limited availability of convenient public transport. Walking and cycling often proves difficult due to the distance between the home and work place as well as a lack of quality facilities. In this regard, the following factors are typically attributed to a high mode share for private vehicles at regional hospitals:

- residential locations and hospital locations can have limited access to public transport services
- driving presents attractive travel time advantages for many key staff origins
- limited number of locations have access to direct public transport connections that do not require interchanging. This typically results in longer travel times, as well as influencing the perception of a lack of convenience and reliability
- time of arrival/ departure, due to shift work, potentially limits the access to frequent public transport services. Staff that work in shifts with start/ end times outside peak hours might also experience personal security issues
- time of arrival/ departure influences perceived comfort of traveling via alternate modes of transport, in particular outside peak hours
- unpredictable hospital activities may extend staff shift finish times. This can leave staff 'stranded' if public transport options are limited
- staff may need to drive to efficiently conduct other activities on their way to/ from the hospital such as school set-down/ pick-up activities.

Strategies can be implemented to encourage staff to reduce their reliance on private vehicles.

7.3 Travel Demand Strategies

Several opportunities exist to provide BDH staff with incentives to consider alternative modes of travel to and from work. The following recommendations are high level strategies that would need to be developed in greater detail and through consultation with relevant stakeholders. It is noted that this proposal only generates a minimal number of additional vehicle trips and

therefore these travel demand strategies are not required for this proposal, however the hospital should consider for their future operation.

- **Staff Accommodation**
 - Provide staff accommodation near the site. This may encourage:
 - walking and/ or cycling to work
 - car-pooling between staff working the same shifts.
 - Provide a shuttle bus service between staff accommodation and the hospital to further reduce reliance on private vehicles.
- **Shuttle Bus Service**
 - Develop shuttle bus routes targeting key residential areas near the hospital with low public transport connectivity.
- **Public Transport**
 - Arrange public transport trips to be aligned with hospital shifts through consultation with bus operators.
- **Active Travel**
 - Provide high quality and prominent bicycle parking and change/ shower facilities.
 - Provide clear pedestrian and cyclist wayfinding.
 - Provide shelters along walkways or near bus stops and street lighting.
 - Encourage cultural change through:
 - creating a bike user group (targeting staff living within five kilometres of the hospital)
 - events such as annual 'ride to work' day
 - providing information detailing opportunities and facilities available to staff. This may include providing maps of the available cycling routes to and within the hospital site.
- **Promote Car-Pooling**
 - Provide prioritised car pool parking spaces on-site, including consideration for incentives such as prices, location and proximity to services.

8. Consultations

Table 8.1 provides an overview of consultation GTA have undertaken on this project.

Table 8.1: Consultation

Day/ Date	Personnel	Comments
Friday, 16 March 2018	Rachel Carocci – Roads and Maritime	Phone discussion with Rachel to determine Roads and Maritime SEARs requirements. Rachel acknowledged the development had a minimal impact to the surrounding road network. She confirmed that Saturday surveys and ten-year horizon analysis would not be required.
20 March 2018	Rachel Carocci – Roads and Maritime	Email from Rachel confirming that 2016 SIDRA analysis was sufficient due to the expected minimal increase.
Monday, 26 March 2018	Council Pre-DA meeting	<p>Frank Iacono – Traffic and Transport Planning Engineer advised that Council had undertaken their own parking surveys in the roads surrounding the hospital. Frank provided these to GTA.</p> <p>GTA discussed through the SEARs requirements with Frank Iacono to determine Councils requirements and expectations. It was acknowledged that the proposed development is only generating a minimal number of additional trips and therefore minimal impact to the surrounding road network.</p> <p>Frank requested that the surveys undertaken in 2016 have a 1.5 per cent annual growth applied to represent 2018 existing conditions. This has been done.</p>
Wednesday, 4 April 2018	Frank Iacono - Council	Email correspondence with Frank Iacono to discuss through the process required for relocating the bus stop and installing parking restrictions. Frank provided contact details for Frank Perger who runs the traffic committee.
Wednesday, 11 April 2018	Frank Perger - Council	Phone discussion with Frank Perger to understand the process required for approval through the traffic committee. Frank advised he had already talked to the bus company regarding the relocation of the bus stop. He advised it should be moved opposite St Jude Street and recommended no parking between the front of the bus stop and the ED access. Frank advised to submit the on-street parking restrictions and the bus relocation together and he would submit to the traffic committee.

9. Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

- i The proposed Bowral and District Hospital Redevelopment (BDHR) includes an increase of 5,990 square metres of GFA, with net increase of three beds.
- ii The site has an existing on-site parking supply of 196 parking spaces (excluding private hospital parking) with a peak demand of 184 spaces (94 per cent occupancy). While there is some capacity on-site, site observations indicate that car parking demand for the hospital overflows to the frontage streets of the hospital.
- iii The existing site currently contains a total of 91 beds. The proposed development would include an increase of three beds, therefore providing 94 beds in total.
- iv Analysis of parking requirements has been assessed based on staff numbers, bed numbers, GFA increase and Roads and Maritime Guidelines. As the BDHR is more about bringing the current facilities up to standard rather than increasing services, parking calculations have been based on the net increase in bed numbers which results in a total on-site provision of 198 spaces.
- v The BDHR provides a total parking provision of 198 spaces, which meets the parking requirement of the proposal.
- vi On-site observations indicate an availability on-street parking on streets adjacent to the frontage streets, therefore there is opportunity to accommodate some parking shortfall within the surrounding on street parking.
- vii The proposed redevelopment design provides a total of 10 disabled parking spaces, which is in accordance with the Building Code of Australia.
- viii The site would benefit from targeted wayfinding signage designed to inform users of hospital facilities.
- ix The proposed site is expected to generate an additional two vehicles per hour in evening peak hour. This is a negligible impact which can easily be accommodated on the surrounding road network.
- x The BDHR access and parking layout has been designed in accordance with the requirements of the Australian Standard for Off Street Car Parking (AS2890.1:2004 and AS2890.6:2009).

Appendix A

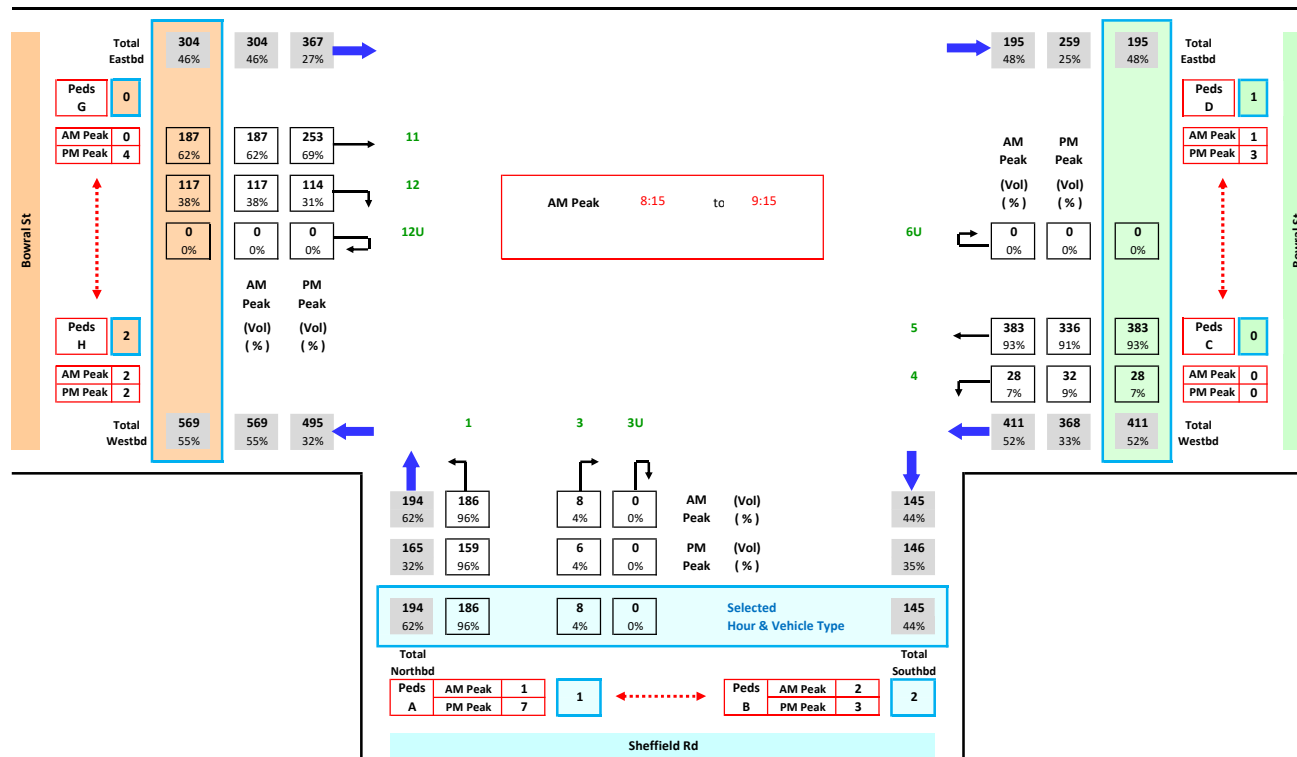
Survey Results

Job No. : N2437
Client : GTA
Suburb : Bowral
Location : 1. Bowral St / Sheffield Rd

Day/Date : Thu, 9th June 2016
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram



Hour Starting 8:15 Vehicle Type All Vehicles

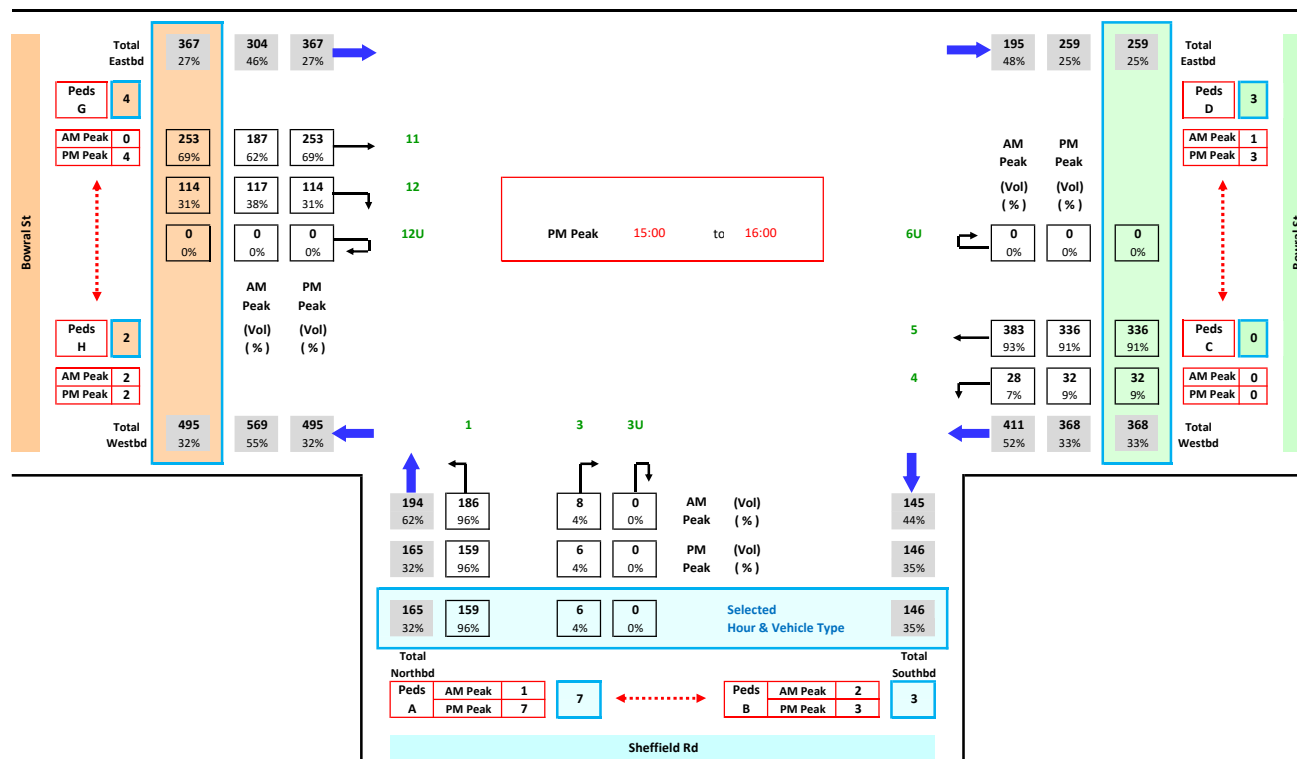


Job No. : N2437
Client : GTA
Suburb : Bowral
Location : 1. Bowral St / Sheffield Rd

Day/Date : Thu, 9th June 2016
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram



Hour Starting 15:00 Vehicle Type All Vehicles

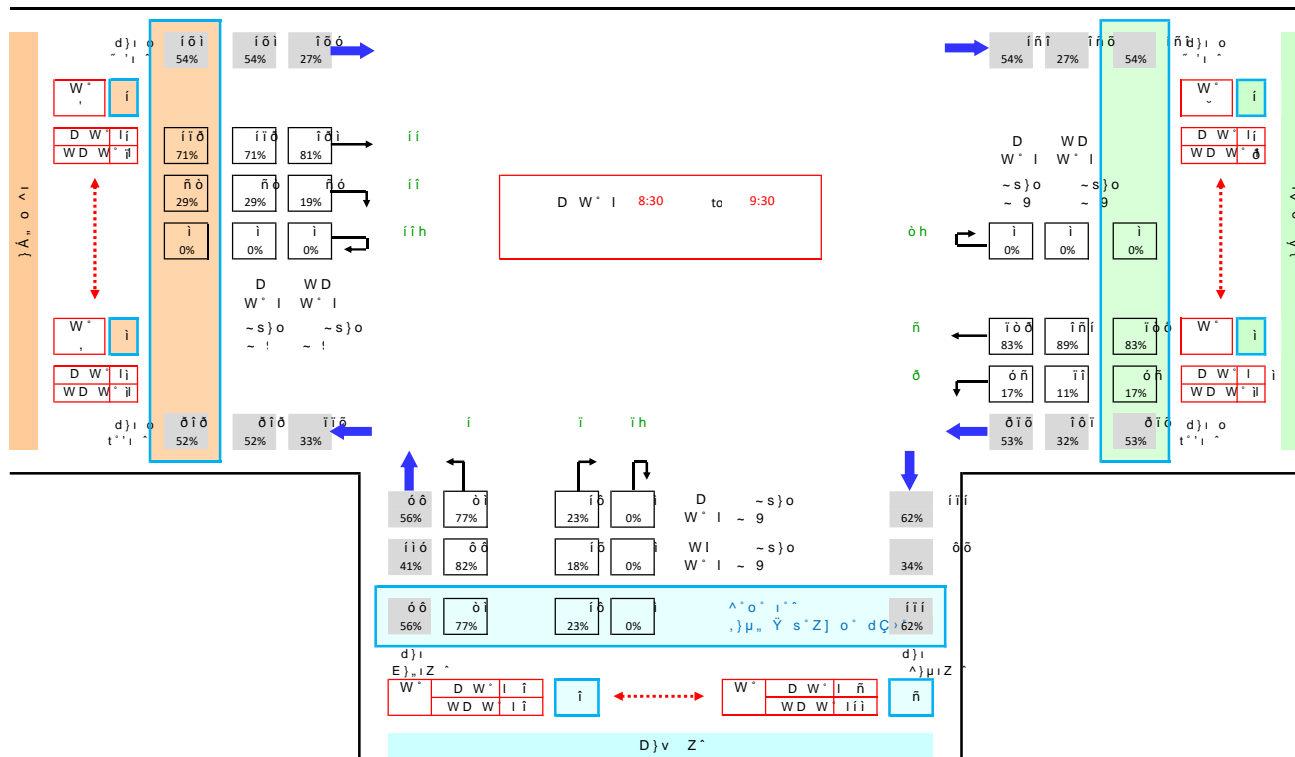


: } E } X : N2437
 o } ^ v i : GTA
 ^ μ μ : Bowral
 > } i } v : 2. Bowral St / Mona Rd

~ Ç l ~ i ~ : Thu, 9th June 2016
 t ^ i Z ~ : Fine
 ~ ~ ~ ~ ~ } v } i } vClassified Intersection Count
 : Intersection Diagram



: } μ ~ ^ i ~ ~ i } v P s ^ Z } o ^ Ç ~
 8:30 ▼ All Vehicles ▼

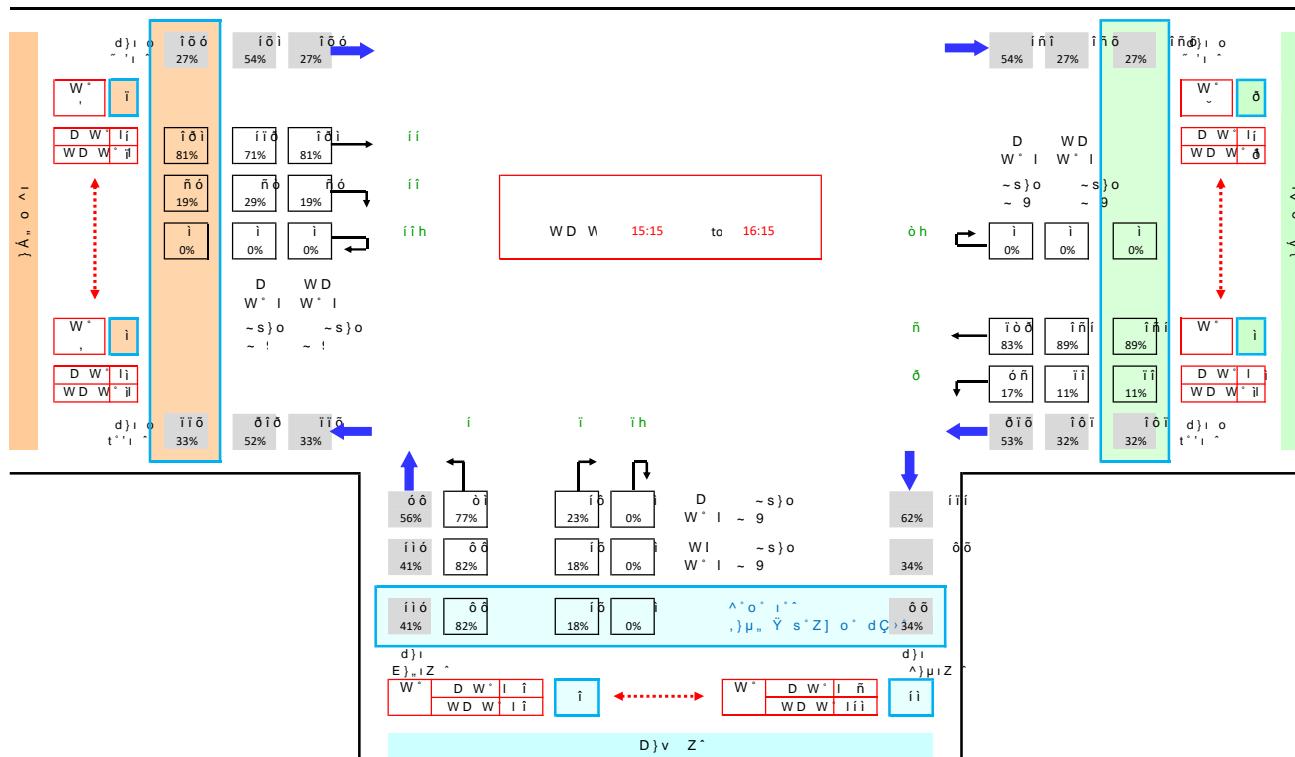


: } E } X : N2437
 o } v i : GTA
 ^ μ μ : Bowral
 > } i } v : 2. Bowral St / Mona Rd

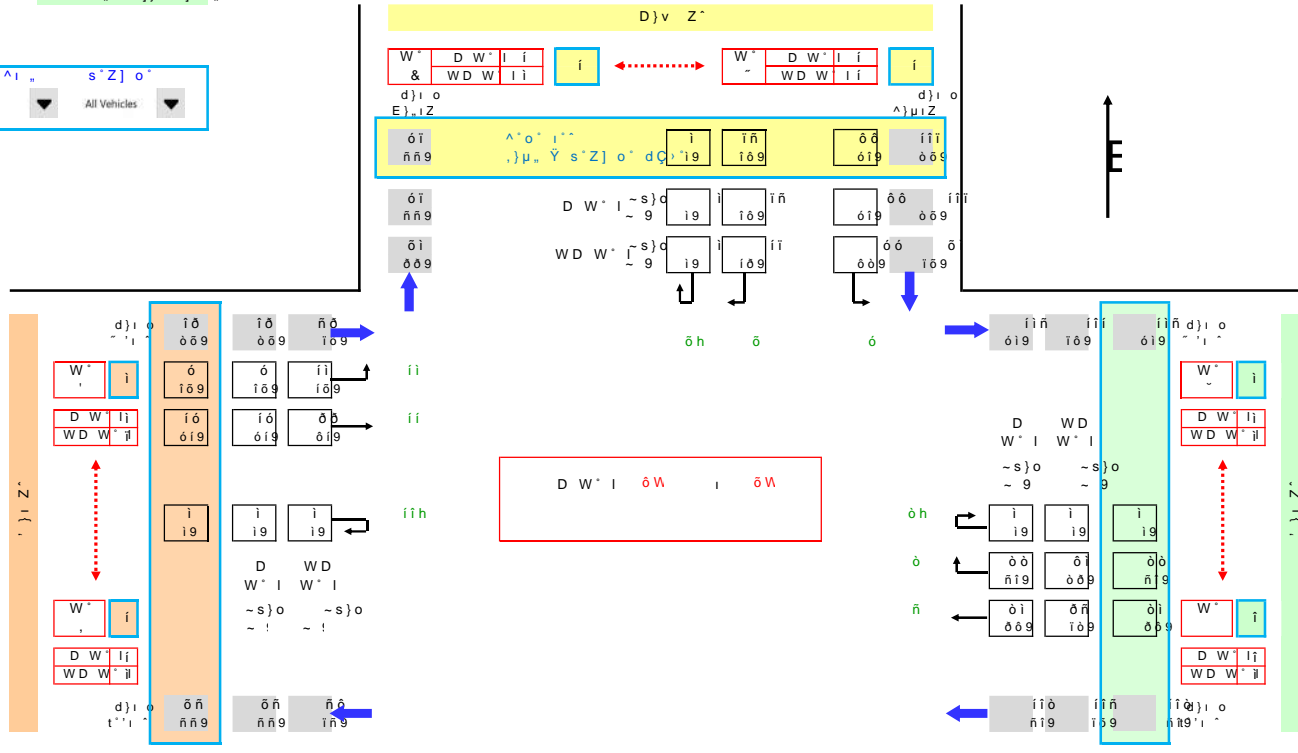
~ C l ~ i ~ : Thu, 9th June 2016
 t ~ i Z ~ : Fine
 ~ ~ ~ ~ ~ : vClassified Intersection Count
 : Intersection Diagram



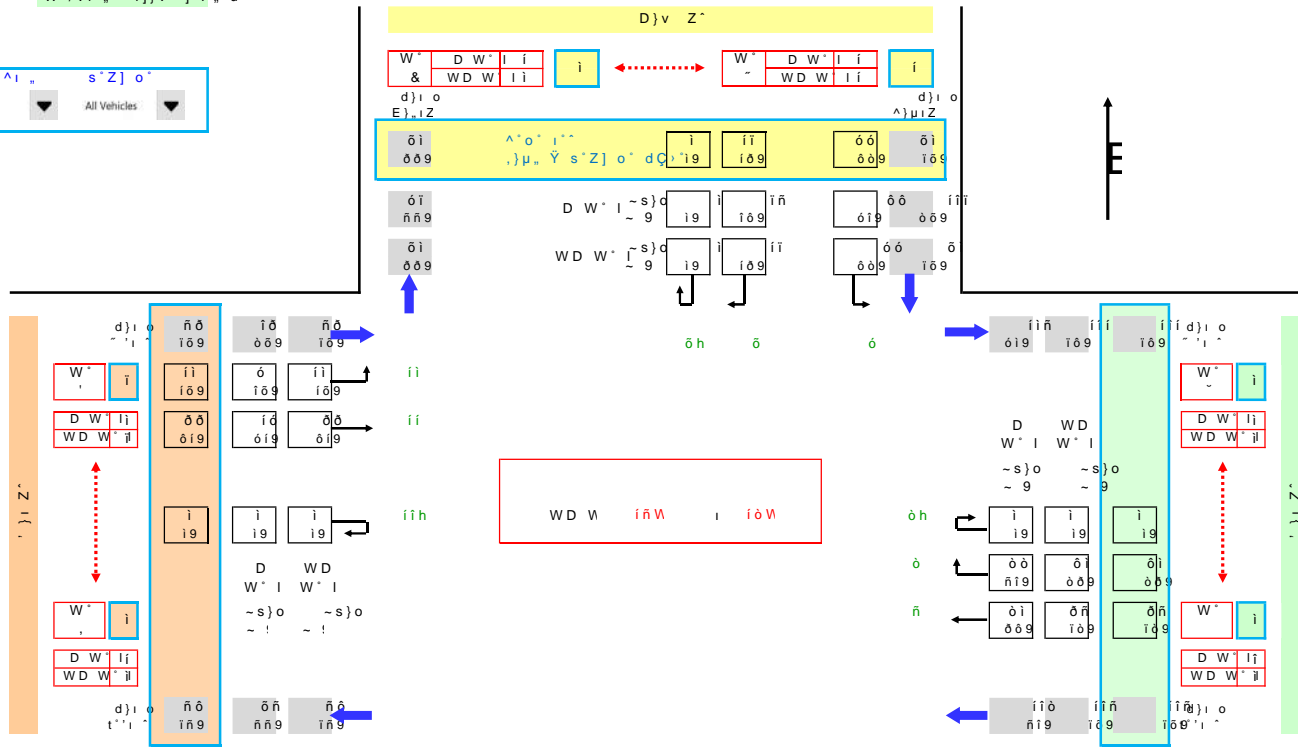
: } μ ~ ^ i ~ i } v P s ~ Z } o ~ d C ~
 15:15 All Vehicles



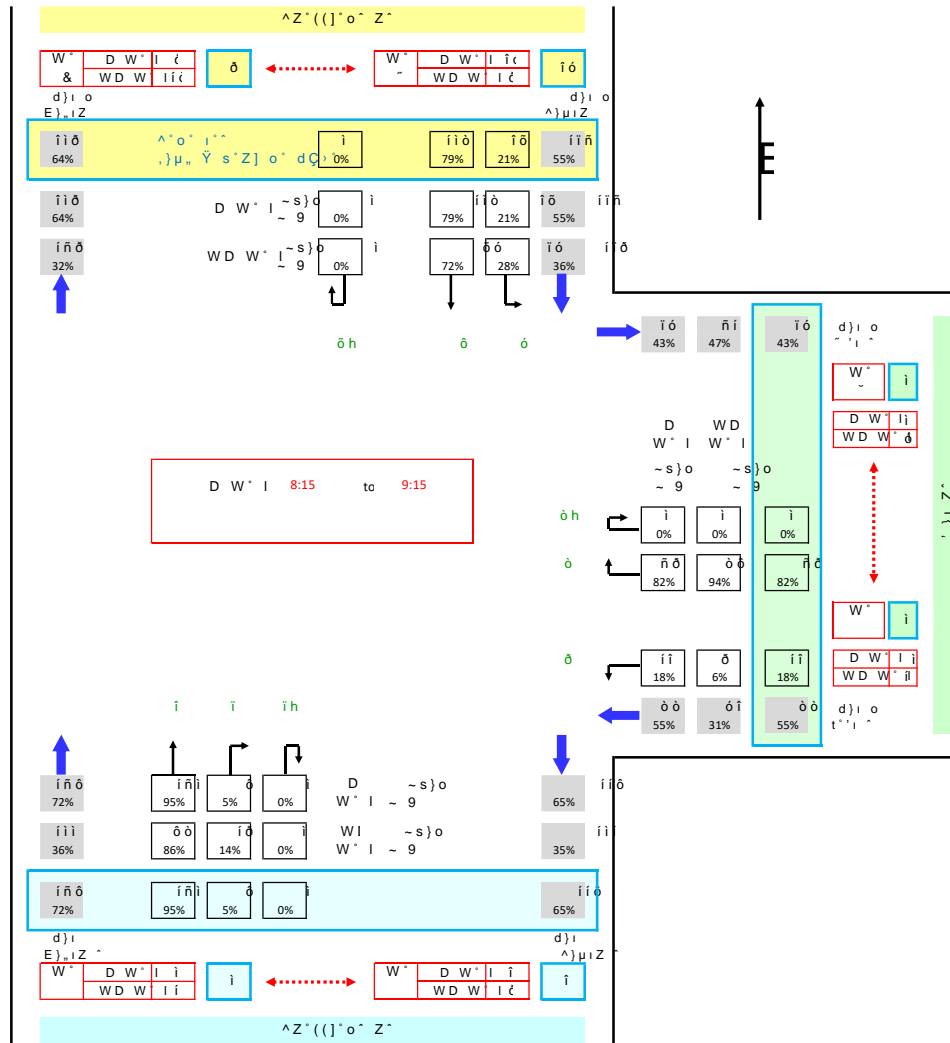
8:30 All Vehicles



15:00 All Vehicles

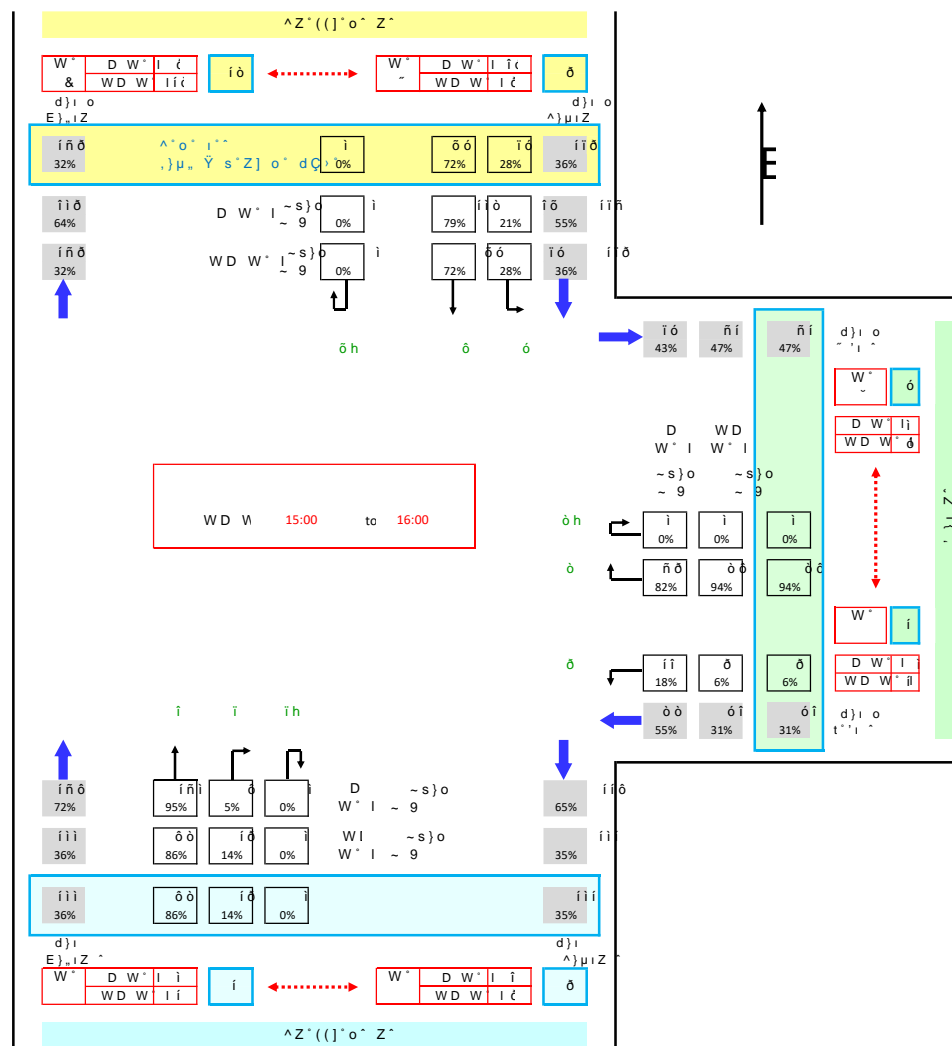


8:15  All Vehicles 



$\sim \zeta | \sim 1^*$: Thu, 9th June 2016
 $t^* | Z^*$: Fine
 $\sim^* \sim_n \rangle \rangle \} \nu$ Classified Intersection Count
 : Intersection Diagram

15:00 All Vehicles



			Between			Restriction				Demand			
Street	On-street (S) Off-street (O)	Side		To		Area	Type	Hours	Supply	11:30am-12:30pm	3:30-4:30pm	5:30-6:30pm	
Mona Street	S	E	Ascot Road	-	Bowral Street		2P	8:30am-6pm M-F	7	7	2	0	
Mona Street	S	E	Ascot Road	-	Bowral Street		Disabled		2	0	0	0	
Mona Street	S	E	Ascot Road	-	Bowral Street		1/2P	8:30am-6pm M-F, 8:30am-12:30pm Sat	3	1	2	0	
Mona Street	S	E	Ascot Road	-	Bowral Street		2P	8:30-6pm M-F	9	8	3	2	
Bowral Street	S	N	Glebe Street	-	St Jude Street		Unrestricted		14	14	7	3	
Bowral Street	S	N	Glebe Street	-	St Jude Street		Bus Zone	7am-7pm M-Sat					
Bowral Street	S	N	Glebe Street	-	St Jude Street		Unrestricted		12	12	6	2	
Bowral Street	S	S	Mona Street	-	Sheffield Road		Unrestricted		4	3	0	0	
Bowral Street	S	N	Mona Street	-	Sheffield Road		Bus Zone	7am-7pm M-Sat					
Bowral Street	S	S	Mona Street	-	Sheffield Road		Unrestricted		5	5	1	1	
Bowral Street	S	S	Mona Street	-	Sheffield Road		2P	8:30am-6pm M-F, 8:30am-12:30pm Sat	9	9	5	2	
Private Hospital		-					Private-Visitor		27	20	22	21	
Private Hospital		-					Private-Doctors Only		4	4	3	2	
Private Hospital		-					Private-Volunteers Only		3	3	1	2	
Private Hospital		-					Private-Disabled		2	1	1	1	
Private Hospital		-					Private-Drop off		2	1	0	0	
Eastern Bowral Car Park	O						Unrestricted		16	16	12	15	
Eastern Bowral Car Park	O						Disabled		2	2	0	0	
Western Bowral Car Park	O						Unrestricted		37	37	29	33	
Western Bowral Car Park	O						Disabled		2	1	0	0	

Eastern Car Park	O				Unrestricted		7	7	5	2	
Eastern Car Park	O				Staff	On Call Doctors	4	4	2	1	
Eastern Car Park	O				Disabled		1	0	0	0	
Eastern Car Park	O				1/2P		2	2	1	0	
Eastern Car Park	O				Drop Off		4	2	1	1	
Ascot Road	S	S	Mona Street	Sheffield Road	Unrestricted		4	4	0	0	
Ascot Road	S	S	Mona Street	Sheffield Road	Unrestricted		29	28	21	0	
Ascot Road	S	N	Mona Street	Sheffield Road	Unrestricted		21	21	16	1	
Sheffield Road	S	E	Ascot Road	Site Access	Unrestricted		10	10	4	2	
Sheffield Road	S	E	Site Access	Bowral Street	2P	8:30am-6pm M-F, 8:30am-12:30pm Sat	15	14	6	3	
Sheffield Road	S	W	Ascot Road	Warenda Street	Unrestricted		4	4	4	4	
Sheffield Road	S	W	Warenda Street	Bowral Street	No Stopping						
Sheffield Road	S	W	Warenda Street	Bowral Street	Unrestricted		14	14	8	5	
Sheffield Road Car Park	O				Day Surgery Clinic patients		6	6	5	2	
Sheffield Road Car Park	O				Disabled	Day Surgery Clinic patients	1	1	0	0	
Sheffield Road Car Park	O				Unrestricted		2	2	0	0	
Sheffield Road Car Park	O				X-Ray		1	1	1	1	
Sheffield Road Car Park	O				Disabled	X-Ray	1	1	1	0	
Sheffield Road Car Park	O				Staff	Doctors Only	1	1	1	1	
Sheffield Road Car Park	O				Staff	Authorised Access Only	6	6	2	0	
Ascot Road Car Park	O				Unrestricted		46	45	28	8	
Ascot Road Car Park	O				Unrestricted		18	18	16	4	
Ascot Road Car Park	O				Disabled		2	0	0	0	
Ascot Road Car Park	O				Staff	Health Service Vehicles Only	16	12	14	10	
Ascot Road Car Park	O				1/4P		6	4	4	0	
Ascot Road Car Park	O				2P		6	4	5	2	
Ascot Road Car Park	O				Disabled	2P	2	0	0	0	
Ascot Road Car Park	O				Staff	Health Service Vehicles Only	1	2	1	1	
Ascot Road Car Park	O				Staff	Reserved for Ambulance Staff	6	13	4	4	

Appendix B

SIDRA INTERSECTION Results

029(0(17 6800\$5<

▽ 6LWH\>%RZUDO 6W 6K(HILNWDGJ5\$@

\$0 3HDN ~~~
*LYHZD\ <LHDG 7ZR

0RYHPHQW 3HUIBHRDQGHV											
0RY	2'	'HPDQG)	'HJ	\$YHU	/HYH	~	%DFN	RI 4	3UR	(IHF\	\$YHU
,	0RY	7R' +€	6D	'HOI	6HU\	9HKL	'LVWI	4XHX	6WRS	6SHH	
		YH\	Y	V\		Y\	P		SHU	NP	
6RXWK\ 6KHILHOG 5RDG											
	/			~	/26			~		~	~
	5			~	/26			~		~	~
\$SSURDF					/26			~		~	~
(DVW\ %RZUDO 6W											
	/				/26					~	
~	7	~			/26					~	^
\$SSURDF					1\$					~	^
:HVW\ %RZUDO 6W											
	7				/26			^		^	^
	5	^		~	/26			^		~	.
\$SSURDF					1\$			^			^
\$OO 9HK					1\$			^			^

6LWH /HYHO RI 6HUylFH /26 0HWKRG\ 'HOD\ 57\$ 16: 6LWH6LWVHQRGLDVC
9HKLFOH PRYHPHQW /26 YDOXH V DUH EDVHG RQ DYHUDJH GHOD\ SHU PRYHP
0LQRU 5RDG \$SSURDFK /26 YDOXH V DUH EDVHG RQ DYHUDJH GHOD\ IRU DOO
1\$,QWHUVHFWRU /26 DQG 0DMRU 5RDG \$SSURDFKZ/26 YDOXH V DUH EDVHG RQ
LV QRW D JRRG /26 PHDVXUH GXH WR JHUR GHOD\ DVVRFLDWHG ZLWK PDMR
6,'5\$ 6WDQGDUG 'HOD\ 0RGHO LV XVHG &RQWURO 'HOD\ LQFOXGHV *HRPHWL
*D\$FFHSWDQFH &DSDFLW\ 6,'5\$ 6WDQGDUG \$NoHOLN 0 '
+9 YDOXH V DUH FDOFXODWHG IRU \$OO 0RYHPHQW &ODVVHV RI \$OO +HDY\

6,'5\$,17(56(&7,21_&RS\ULJKW %oo^ \$NFHOLN DQG \$VVRFLDWHG 6RQXWGRQV FRP
2UJDQLVDWLRQ *7\$ &2108/15V76HG\)ULGD\ \$\$ULO ~ 30
3URMHW\ 6 ~ ~ ~ ? ~ 6 ~ ~ %RZUDO 'LVWULFW +RVS'6WDO?0RGH&RGLQ\5 ~ ~

▽ 6LWH. >% RZUDO 6W 6K(HILMLWDCJ 5330 @

0RYHPHQW 3HUIURDQGHV											
0RY 2'	'HPDQG)	'HJ \$YHU	/HYH	~ %DFN RI 4	3UR (IIHF)	\$YHU					
' 0RY	7R' +\$	6D 'HOI	6HU\	9HKL 'LVWI	4XHX 6WRS	6SHH					
	YH	Y	Vf	Yf	P	SHU NP					
6RXWK 6KHILHOG 5RDG											
/	^	~	~	/26	~	~					
5	~	~	~	/26	~	~					
\$SSURDF ^^ ~											
(DVW %RZ(UDO 6W											
/	~			/26	~	~					
7	~			/26	~	~					
\$SSURDF ^^ 1\$											
:HVW %RZUDO 6W											
7	^^	~		/26	^	~					
5		~		/26	^	^					
\$SSURDF ^^ 1\$											
\$OO 9HK ^^ 1\$											

```

6LWH /HYHO RI 6HUYLEFH /26 0HWKRG\ 'HOD\ 57$ 16: 6LWH6LWH 0HWKRG\GLDC
9HKLFOH PRYHPHQW /26 YDOXHV DUH EDVHG RQ DYHUDJH GHOD\ SHU PRYHP
0LQRU 5RDG $$$SRDFK /26 YDOXHV DUH EDVHG RQ DYHUDJH GHOD\ IRU DOO
1$ ,QWHUVHFWRQ /26 DQG 0DMRU 5RDG $$$SRDFKZD6 YDOXHVPRYHPHQWRYD
LV QRW D JRRG /26 PHDVXUH GXH WR JHUR GHOD\ DVVRFLDWHG ZLWK PMR
6,'5$ 6WDQGDUJ 'HOD\ 0RGHO LV XVHG &RQWURO 'HOD\ LQFOXGHV *HRPHWL
*$$$FFHSWDQFH &DSDLW\ 6,'5$ 6WDQGDUJ $NOLN 0 '
+9 YDOXHV DUH DFOFXODWHG IRU $OO 0RYHPHQW&ODVVHV RI $OO +HDY\

```

```
6, '5$, 17(56(&7,21_&RS\ULJKW %%^ $NFHOLN DQG $VVRF\LVWUD\3RQXWGRQV FRP
2UJDQLVDWL RQ *7$ &236879$V776HG )ULGD\ $$ULO ^ 30
3URM8FW'6 ~~~~~? '6 ~~~~~ %RZUDO 'LVWULFW +RVS'6WDO?0RGH&RSLVLS ~ ~
```

029(0(17 6800\$5<

▽ 6LWH\>%RZUDO 6W 0[RQD\5GJ \$0 @

\$0 3HDN ~
*LYHZD\ <LHDG 7ZR

0RYHPHQW 3HUIRHRDQGHV											
0RY	2'	'HPDQG)	'HJ	\$YHU	/HYH	~	%DFN	RI 4	3UR	(IHF\	\$YHU
,	0RY	7R' +§	6D	'HOI	6HU\	9HKL	'LVWI	4XHX	6WRS	6SHH	
		YH\	Y	Vf		Yf	P		SHU	NP	
6RXWK\ 0RQD 5G											
	/		~	~	/26						~
	5		~	~	/26						~
\$SSURDF											
(DVW\ %RZUDO 6W											
	/				/26						~
	7		~		/26						~
\$SSURDF											
:HVW\ %RZUDO 6W											
	7				/26						~
	5				/26						~
\$SSURDF											
\$OO 9HK											
					1\$						~

6LWH /HYHO RI 6HUylFH /26 0HWKRG\ 'HOD\ 57\$ 16: 6LWH6'26WVHQRGLDVC
9HKLFOH PRYHPHQW /26 YDOXH V DUH EDVHG RQ DYHUDJH GHOD\ SHU PRYHP
0LQRU 5RDG \$SSURDFK /26 YDOXH V DUH EDVHG RQ DYHUDJH GHOD\ IRU DOO
1\$,QWHUVHFwLRQ /26 DQG 0DMRU 5RDG \$SSURDFKZ/26 YDOXH V DUH EDVHG RQ
LV QRW D JRRG /26 PHDVXUH GXH WR JHUR GHOD\ DVVRFLDWHG ZLWK PDMR
6,'5\$ 6WDQG DUG 'HOD\ 0RGHO LV XVHG &RQWURO 'HOD\ LQFOXGHV *HRPHWL
*D\$FFH\$WDQFH &DSDFLW\ 6,'5\$ 6WDQG DUG \$N\$HOLN 0 '
+9 YDOXH V DUH FDOFXODWHG IRU \$OO 0RYHPHQW &ODVVHV RI \$OO +HDY\

6,'5\$,17(56(&7,21_&RS\ULJKW %_~ \$NFHOLN DQG \$VVRFLDWHG 3RQXWGRQV FRP
2UJDQLVDWLRQ *7\$ &2308/7\$V76HG)ULGD\ \$SULO ~ 30
3URMHLFW 6 ~ ~ ~ ? ~ 6 ~ ~ %RZUDO 'LVWULFW +RVS'6WDQ?0RGH&RGLQLS ~ ~

029(0(17 6800\$5<

▽ 6LWH, >%RZUDO 6W 0[RQD\5GJ 30 @

30 3HDN ~ ~ ~
*LYHZD\ <LHDG 7ZR

0RYHPHQW 3HUIRHRDQGHV											
0RY	2'	'HPDQG)	'HJ	\$YHU	/HYH	~	%DFN	RI 4	3UR	(IHF\	\$YHU
,	0RY	7R' +€	6D	'HOI	6HU\	9HKL	'LVWI	4XHX	6WRS	6SHH	
		YH\	Y	Vf		Yf	P		SHU	NP	
6RXWK, 0RQD 5G											
	/	~			/26						
	5				/26						
\$SSURDF ^											
(DVW, %RZUDO 6W											
	/	~	~		/26						~
	7	^	~		/26						~
\$SSURDF ^											
:HVW, %RZUDO 6W											
	7	~	.		/26						.
	5	~	.		/26						^
\$SSURDF											
\$OO 9HK ^ ~											

6LWH /HYHO RI 6HUylFH /26 0HWKRG, 'HOD\ 57\$ 16: 6LWH6,26WVHQRGLDVC
9HKLFOH PRYHPHQW /26 YDOXH V DUH EDVHG RQ DYHUDJH GHOD\ SHU PRYHP
0LQRU 5RDG \$SSURDFK /26 YDOXH V DUH EDVHG RQ DYHUDJH GHOD\ IRU DOO
1\$, QWHUVHFwLRQ /26 DQG 0DMRU 5RDG \$SSURDFKZ/26 YDOXH V DUH EDVHG RQ
LV QRW D JRRG /26 PHDVXUH GXH WR JHUR GHOD\ V DVVRFLDWHG ZLWK PDMR
6,'5\$ 6WDQG DUG 'HOD\ 0RGHO LV XVHG &RQWURO 'HOD\ LQFOXGHV *HRPHWL
*D\$FFHSWDQFH &DSDFLW\, 6,'5\$ 6WDQG DUG \$N\$HOLN 0 '
+9 YDOXH V DUH FDOFXODWHG IRU \$OO 0RYHPHQW &ODVVHV RI \$OO +HDY\

6,'5\$,17(56(&7,21_&RS\ULJKW %~ \$NFHOLN DQG \$VVRFLDWHG 3RQXWGRQV FRP
2UJDQLVDWLRQ, *7\$ &2308/7\$V76HG,)ULGD\ \$SULO ~
3URMHLFW, 6 ~ ~ ~? ~ 6 ~ ~ %RZUDO 'LVWULFW +RVS'6WDO?0RGH&RGLQLS ~ ~

029(0(17 6800\$5<

▽ 6LWH, >6KHIILHOG 5G (\$LVFRWQ 6V\$0 @

\$0 3HDN ~~~~
*LYHZD\ <LHOG 7ZR

0RYHPHQW 3HUIBHRDQGHV											
0RY	2'	'HPDQG)	'HJ	\$YHU	/HYH	~	%DFN	RI 4	3UR	(IHF\	\$YHU
,	0RY	7R' +§	6D	'HOI	6HU\	9HKL	'LVWI	4XHX	6WRS	6SHH	
		YH\	Y	V\		Y\	P		SHU	NP	
6RXWK, 6KHIILHOG 5G											
	7	~			/26					~	.
	5	.		~	/26					.	.
\$SSURDF ^											
(DVW, \$VFRW 6W											
	/		^		/26				~	~	
~	5	~	^	~	/26				~	~	~
\$SSURDF ^											
1RUWK, 6KHIILHOG 5G											
	/		^		/26					.	.
.	7	~	^		/26					~	
\$SSURDF ~											
\$OO 9HK											
		~	~		1\$.	^

6LWH /HYHO RI 6HUYLEFH /26 0HWKRG, 'HOD\ 57\$ 16: 6LWH6,26VW,6HQRGLDVC
9HKLFOH PRYHPHQW /26 YDOXHV DUH EDVHG RQ DYHUDJH GHOD\ SHU PRYHP
0LQRU 5RDG \$SSURDFK /26 YDOXHV DUH EDVHG RQ DYHUDJH GHOD\ IRU DOO
1\$, QWHUVHFWRQ /26 DQG 0DMRU 5RDG \$SSURDFKZ/26 YDOXHV DUH EDVHG RQ
LV QRW D JRRG /26 PHDVXUH GXH WR JHUR GHOD\ DVVRFLDWHG ZLWK PDMR
6,'5\$ 6WDQGDUG 'HOD\ 0RGHO LV XVHG &RQWURO 'HOD\ LQFOXGHV *HRPHWL
*D\$FFH\$WDQFH &D\$D\$FLW\, 6,'5\$ 6WDQGDUG \$N\$HOLN 0 '
+9 YDOXHV DUH FDOFXODWHG IRU \$OO 0RYHPHQW &ODVVHV RI \$OO +HDY\

6,'5\$,17(56(&7,21_&RS\ULJKW %~ \$NFHOLN DQG \$VVRFLDWHG 6RQXWGRQV FRP
2UJDQLVDWLRQ *7\$ &2108/1\$V76HG)ULGD\ \$SULO ~ 30
3URMHLFW,6 ~~~~? ~6 ~~~~ %RZUDO 'LVWULFW +RVS'6WDQ?0RGH&RGLQ'LS ~ ~

029(0(17 6800\$5<

▽ 6LWH, >6KHIILHOG 5G (\$LVFRWQ 6V30@

30 3HDN ~ ~
*LYHZD\ <LHDG 7ZR

0RYHPHQW 3HUIRURDQGHV											
0RY	2'	'HPDQG)	'HJ	\$YHU	/HYH	~	%DFN	RI 4	3UR	(IHF\	\$YHU
,	0RY	7R' +§	6D	'HOI	6HU\	9HKL	'LVWI	4XHX	6WRS	6SHH	
		YH\	Y	Vf		Yf	P		SHU	NP	
6RXWK, 6KHIILHOG 5G											
	7	"	~		/26						~
	5	~	~	~	/26						.
\$SSURDF				~	1\$						~
(DVW, \$VFRW 6W											
	/		^		/26				~		~
~	5	^	^	~	/26				~		~
\$SSURDF				^	/26				~		~
1RUWK, 6KHIILHOG 5G											
	/		^		/26						^
.	7	~	^		/26						~
\$SSURDF				~	1\$						~
\$OO 9HK				^	1\$.

6LWH /HYHO RI 6HUYLEFH /26 0HWKRG, 'HOD\ 57\$ 16: 6LWH6,26VWVHQRGLDVC
9HKLFOH PRYHPHQW /26 YDOXH V DUH EDVHG RQ DYHUDJH GHOD\ SHU PRYHP
0LQRU 5RDG \$SSURDFK /26 YDOXH V DUH EDVHG RQ DYHUDJH GHOD\ IRU DOO
1\$, QWHUVHFWRQ /26 DQG 0DMRU 5RDG \$SSURDFKZ/26 YDOXH V DUH EDVHG RQ
LV QRW D JRRG /26 PHDVXUH GXH WR JHUR GHOD\ DVVRFLDWHG ZLWK PDMR
6,'5\$ 6WDQGDUG 'HOD\ 0RGHO LV XVHG &RQWURO 'HOD\ LQFOXGHV *HRPHWL
*D\$FFHSWDQFH &DSDFLW\, 6,'5\$ 6WDQGDUG \$N\$HOLN 0 '
+9 YDOXH V DUH FDOFXODWHG IRU \$OO 0RYHPHQW &ODVVHV RI \$OO +HDY\

6,'5\$,17(56(&7,21_&RS\ULJKW % ^ \$NFHOLN DQG \$VVRFLDWHG 3RQXWGRQV FRP
2UJDQLVDWLRQ *7\$ &2308/7\$V76HG)ULGD\ \$SULO ~
3URMHLFW,6 ~ ~ ~? ~6 ~ ~ %RZUDO 'LVWULFW +RVS'6WDQGDUG?0RGHO&RGLQJ\$ ~ ~

029(0(17 6800\$5<

▽ 6LWH, >\$VFRW 6W 0RQD 6WJ \$0@

\$0 3HDN ~
*LYHZD\ <LHDG 7ZR

0RYHPHQW 3HUIRHRDQGHV											
0RY	2'	'HPDQG)	'HJ	\$YHU	/HYH	~	%DFN	RI 4	3UR	(IHF\	\$YHU
,	0RY	7R' +€	6D	'HOI	6HU\	9HKL	'LVWI	4XXH	6WRS	6SHH	
		YH\	Y	Vf		Yf	P		SHU	NP	
(DVW, \$VFRW 6W											
~	7	~	^		/26						^
~	5	^	^		/26						^
\$SSURDF											
1RUWK, 0RQD 6W											
^	/	~	~		/26					~	~
~	5	.	~	~	/26					~	~
\$SSURDF											
:HVW, \$VFRW 6W											
	/	^			/26						~
	7	^			/26						~
\$SSURDF											
\$OO 9HK											
		~^	~		1\$						^

6LWH /HYHO RI 6HUylFH /26 0HWKRG, 'HOD\ 57\$ 16: 6LWH6,2WVH0WKRGLDC
9HKLFOH PRYHPHQW /26 YDOXH V DUH EDVHG RQ DYHUDJH GHOD\ SHU PRYHP
0LQRU 5RDG \$SSURDFK /26 YDOXH V DUH EDVHG RQ DYHUDJH GHOD\ IRU DOO
1\$, QWHUVHFwLRQ /26 DQG 0DMRU 5RDG \$SSURDFKZ/26 YDOXH V DUH EDVHG RQ
LV QRW D JRRG /26 PHDVXUH GXH WR JHUR GHOD\ V DVVRFLDWHG ZLWK PDMR
6,'5\$ 6WDQG DUG 'HOD\ 0RGHO LV XVHG &RQWURO 'HOD\ LQFOXGHV *HRPHWL
*D\$FFH\$WDQFH &DSDFLW\, 6,'5\$ 6WDQG DUG \$N0HOLN 0 '
+9 YDOXH V DUH FDOFXODWHG IRU \$OO 0RYHPHQW &ODVVHV RI \$OO +HDY\

6,'5\$,17(56(&7,21_&RS\ULJKW %00 ^ \$NFHOLN DQG \$VVRFLDWHG VROXWGRQV FRP
2UJDQLVDWLRQ, *7\$ &210R/1\$V76HG,)ULGD\ \$SULO ~ 30
3URMHLFW, 6 ~ ~ ~ ? ~ 6 ~ ~ %RZUDO 'LVWULFW +RVS16WDO?0RGH&RGLQ1S ~ ~

029(0(17 6800\$5<

▽ 6LWH, >\$VFRW 6W (RLQDV 6WJ 30@

30 3HDN ~ ~
*LYHZD\ <LHDG 7ZR

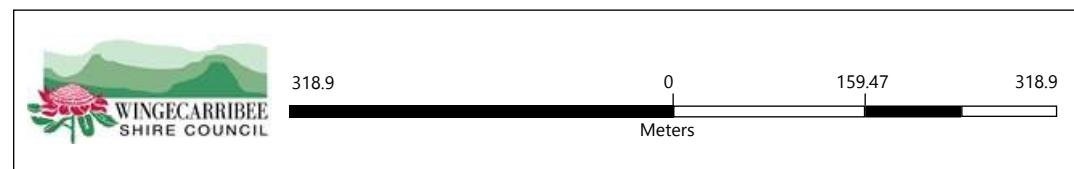
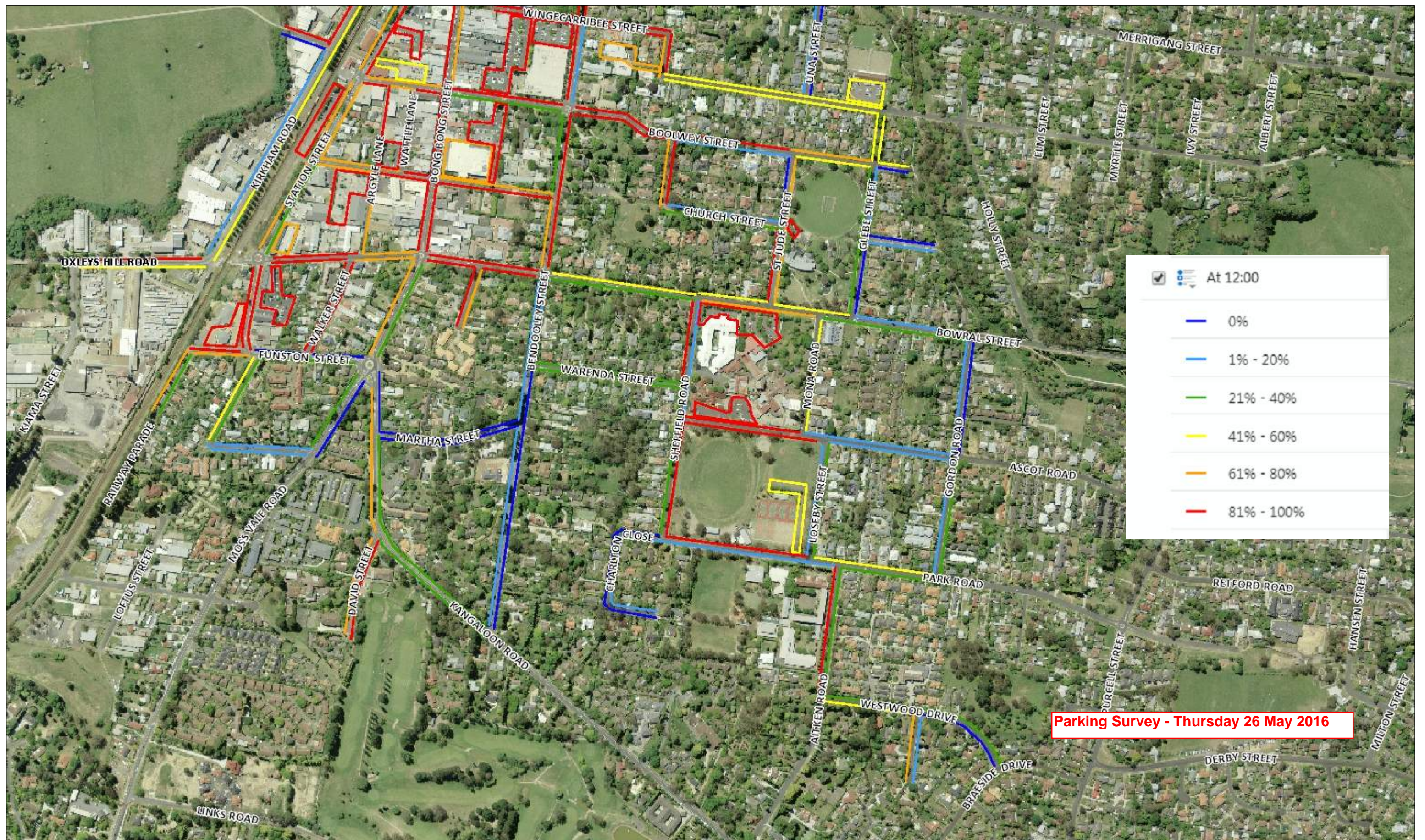
0RYHPHQW 3HUIRHRDQGHV											
0RY	2'	'HPDQG)	'HJ	\$YHU	/HYH	~	%DFN	RI 4	3UR	(IHF\	\$YHU
,	0RY	7R' +€	6D	'HOI	6HU\	9HKL	'LVWI	4XHX	6WRS	6SHH	
		YH\	Y	Vf		Yf	P		SHU	NP	
(DVW, \$VFRW 6W											
~	7		^		/26					^	^
~	5	^^	^		/26					~	~
\$SSURDF											
			^		1\$						^
1RUWK, 0RQD 6W											
^	/		~		/26				~	~	
~	5		~	~	/26				~	~	~
\$SSURDF											
		^^	~		/26				~	~	
:HVV, \$VFRW 6W											
	/				/26					~	~
	7	~			/26					~	~
\$SSURDF											
		^^			1\$						~
\$OO 9HK											
		^^	^		1\$						^

6LWH /HYHO RI 6HUYLEFH /26 0HWKRG, 'HOD\ 57\$ 16: 6LWH6 /26 W0HQWRGLDC
9HKLFOH PRYHPHQW /26 YDOXHV DUH EDVHG RQ DYHUDJH GHOD\ SHU PRYHP
0LQRU 5RDG \$SSURDFK /26 YDOXHV DUH EDVHG RQ DYHUDJH GHOD\ IRU DOO
1\$, QWHUVHFWRQ /26 DQG 0DMRU 5RDG \$SSURDFKZ/26 YDOXHV DUH EDVHG RQ
LV QRW D JRRG /26 PHDVXUH GXH WR JHUR GHOD\ DVVRFLDWHG ZLWK PDMR
6,'5\$ 6WDQGDUG 'HOD\ 0RGHO LV XVHG &RQWURO 'HOD\ LQFOXGHV *HRPHWL
*D\$FFHSWDQFH &DSDFLW\ 6,'5\$ 6WDQGDUG \$N0HOLN 0 '
+9 YDOXHV DUH FDOFXODWHG IRU \$OO 0RYHPHQW &ODVVHV RI \$OO +HDY\

6,'5\$,17(56(&7,21_&RS\ULJKW %0^ \$NFHOLN DQG \$VVRFLDWHG W0HQWRGLDC
2UJDQLVDWLRQ *7\$ &2108/7\$V76HG)ULGD\ \$SULO ~ 30
3URMHLFW 6 ~ ~ ~ ? ~ 6 ~ ~ %RZUDO 'LVWULFW +RVS16WDO?0RGH&RGLQ1S ~ ~

Appendix C

Wingecarribee Council – Parking Occupancy Summary



Wingecarribee Shire Council

Any information (numerical or otherwise), representation, statement, opinion or advice expressed or implied in this publication is made in good faith but on the basis that the council of the shire of Wingecarribee, its agents and its employees are not liable (whether by reason of negligence, lack of care or otherwise) to any person for any damage or loss whatsoever which has occurred or may occur in relation to that person taking or not taking (as the case may be) action in respect of any information, representation, statement, or advice referred to above.

Copyright © Wingecarribee Shire Council, Copyright © Land and Property Information (LPI) 2017



Melbourne
A Level 25, 55 Collins Street
PO Box 24055
MELBOURNE VIC 3000
P +613 9851 9600
E melbourne@gta.com.au

Sydney
A Level 16, 207 Kent Street
SYDNEY NSW 2067
P +612 8448 1800
E sydney@gta.com.au

Brisbane
A Level 4, 283 Elizabeth Street
BRISBANE QLD 4000
GPO Box 115
BRISBANE QLD 4001
P +617 3113 5000
E brisbane@gta.com.au

Canberra
A Tower A, Level 5,
7 London Circuit
Canberra ACT 2600
P +612 6243 4826
E canberra@gta.com.au

Adelaide
A Suite 4, Level 1, 136 The Parade
PO Box 3421
NORWOOD SA 5067
P +618 8334 3600
E adelaide@gta.com.au

Gold Coast
A Level 9, Corporate Centre 2
Box 37, 1 Corporate Court
BUNDALL QLD 4217
P +617 5510 4800
F +617 5510 4814
E goldcoast@gta.com.au

Townsville
A Level 1, 25 Sturt Street
PO Box 1064
TOWNSVILLE QLD 4810
P +617 4722 2765
E townsville@gta.com.au

Perth
A Level 27, 44 St Georges Terrace
PERTH WA 6000
P +618 6361 4634
E perth@gta.com.au